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ECONOMIC COMMISSION FOR EUROPE

**THE COAL SITUATION IN EUROPE  
IN 1971  
AND ITS PROSPECTS**



**UNITED NATIONS**  
**New York, 1972**

ECE/COAL/2

UNITED NATIONS PUBLICATION

*Sales No. E.72.II.E/Mim.20*

Price: \$ U.S. 2.15  
(or equivalent in other currencies)

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PREFATORY NOTE

This document contains a review of the coal situation in Europe and its prospects as seen at the time of writing (summer 1972). It is the thirteenth in a series. 1/

In the last issues the European coal situation was analysed in general terms and the common trends and problems were underlined. For the sake of a well-balanced analysis, the 1971 survey concentrates on the situation in the various countries.

The study consists of two chapters. The first one deals, in a concise form, with the demand for coal and the factors which affected demand (general economic activity, competition between the various forms of energy), and with deliveries to the main consuming sectors, production, stocks, productivity and the European trade in solid fuels. The second chapter contains the country monographs and is mainly based on information submitted by governments. The annex contains tables and related definitions and explanations.

All the statistics included in the review have been obtained directly from governments participating in the work of the Economic Commission for Europe either as regularly supplied for publication in the Quarterly or the Annual Bulletins of Coal Statistics for Europe, in the form of memoranda, or as comments or amendments to the provisional version. The document is issued, in accordance with normal procedure, on the Secretariat's responsibility.

The following symbols have been used throughout the present study:

..	Figure not available
-	Nil or negligible quantity
*	Secretariat estimate
p	Provisional figure
t	Tonnages are metric
tce	Tons of coal equivalent

1/ The Coal Situation and Prospects in Europe in 1958/59 (E/ECE/366-E/ECE/COAL/144) Geneva, 1959; The Coal Situation in Europe in 1959/60 and Future Prospects (ST/ECE/COAL/5) Geneva, 1961; Ditto, 1961/62 (ST/ECE/COAL/3) Geneva, 1963; Ditto, 1962/63 (ST/ECE/COAL/9) New York, 1964; Ditto, 1963/64 (ST/ECE/COAL/10) New York, 1965; The Coal Situation in Europe in 1964/65 and its Prospects (ST/ECE/COAL/15) New York, 1966; Ditto, 1965 (ST/ECE/COAL/27) New York, 1967; Ditto, 1966 (ST/ECE/COAL/32) New York, 1967; Ditto, 1967 (ST/ECE/COAL/34) New York, 1968; Ditto, 1968 (ST/ECE/COAL/48) New York, 1969; Ditto, 1969 (ST/ECE/COAL/58); Ditto, 1970 (ST/ECE/COAL/62) New York, 1971.

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I. THE COAL SITUATION IN GENERAL<sup>1/</sup>

A. WORLD PRODUCTION OF HARD COAL<sup>1/</sup>

In 1971, according to first estimates, world hard-coal production reached 2,190 million tons, about the same level as in 1970.

This failure of production to exceed the level of previous years seems to have been chiefly due to a loss of production in the United States of America caused by a miners' strike of 44 days in October and November 1971 and estimated at about 65 million tons. <sup>1/</sup>

A study of the world pattern of hard-coal production reveals the following general features of the situation:

1. A drop of production in the North American continent (564.9 million tons in 1970 and 527.3 million tons in 1971), but an appreciable rise in Canada from 11.59 million tons in 1970 to 14.56 million tons in 1971;

2. A slight rise in South America (8.3 million tons in 1970 and 8.4 million tons in 1971);

3. In Europe,<sup>2/</sup> a slight rise (504.3 million tons in 1970 and 513.6 million tons in 1971), with a further drop of production in the countries members of the European Communities (164.6 million tons in 1970 and 158.6 million tons in 1971);

4. A rise in the USSR (432.7 million tons in 1970 and 441.4 million tons in 1971);

5. An appreciable rise in Asia due to a growth of production in the People's Republic of China (560 million tons in 1970 and 390 million tons in 1971);

6. A growth of production in the Republic of South Africa (54.6 million tons in 1970 and 59 million tons in 1971);

7. A slight growth in Australia (49.6 million tons in 1970 and 50 million tons in 1971).

B. GROWTH AND FUEL PATTERN OF ENERGY DEMAND

In 1971 the consumption of energy in Europe<sup>3/</sup> reached, according to first estimates, 1,880 million tce. This means an increase of 5.4 per cent as compared with 7.7 per cent in 1969.

Growth rates fell off in Western Europe, especially in all the countries members of the European Communities <sup>3/</sup> where for the first time in ten years the growth of internal energy consumption (1.9 per cent in 1971) was lower than that of the gross national product (3.3 per cent) (table A).

<sup>1/</sup> The production figures have been established on the basis of data furnished by the United States Department of the Interior, Bureau of Mines, in International Coal Trade, 1972, and by the Secretariat.

<sup>2/</sup> Unless otherwise stated, statistics for Europe exclude the USSR.

<sup>3/</sup> Statistical Office of the European Communities, Energy in 1971, Luxembourg July 1972.

C. FACTORS INFLUENCING THE DEMAND FOR ENERGY AND FOR SOLID FUELS IN PARTICULAR

1. General economic factors<sup>1/</sup>

(a) Western Europe

In all the industrial countries of Western Europe taken together, the volume of the gross national product rose by about 3 per cent in 1971, but industrial production rose by only 2 per cent. These growth rates are much lower than the average for the last two decades, during which the gross national product rose by about 4.5 per cent annually (in 1970 by 5.2 per cent) and industrial production by 5.5 per cent.

In 1971, very marked differences were observed between the various countries in the growth of total production. Thus, Austria, France and Norway were the only countries in which the gross national product increased by about 5 per cent or more.

(b) Southern Europe

Unlike most western European countries, Greece, Portugal, Turkey and Yugoslavia raised their total production in 1971 at rates almost as high as or even higher than in 1970 and much higher than the averages recorded in the 1960's. In Spain, however, production rose only slightly in 1971.

(c) United States of America

The national product rose by 7.4 per cent (4.8 per cent in 1970), thus marking a general tendency of the economy to revive.

(d) Eastern Europe and the USSR

In the eastern European countries as a whole and in the USSR, economic expansion, as expressed in the growth of national income, was about 6 per cent in 1971, less than in 1970 (8 per cent). Industrial production continued to rise rapidly, although in some countries slightly more slowly than in 1970. For the whole of Eastern Europe, the mean growth rate was 7.5 per cent in 1971 as against 8.4 per cent in 1970. In the USSR, gross industrial production increased by 7.8 per cent in 1971, at a rate very similar to that of 1970 but higher than the predicted rate of 6.9 per cent.

2. Iron and steel production

Steel production

In the world as a whole, a fall of about 2.5 per cent was observed in the production of crude steel; but the figure for 1971, 580 to 585 million tons, was still higher than the 1969 figure. The most conspicuous declines were in Western Europe (-6 per cent), the United States (-8.6 per cent) and Japan (-5 per cent); in Eastern Europe and the USSR, crude steel production exceeded the 1970 figure by 4.5 per cent; the total production of the developing countries rose by nearly 6 per cent.

1/ ECE, The European Economy in 1971, The Steel Market in 1971.

### 3. Climatic factors

Temperature variations markedly affect the consumption of energy in general and of solid fuels in particular. 1/

In France it is estimated that 20 per cent of the total consumption by industry (except the iron and steel industry) was affected by winter severity; the percentage naturally varied very considerably among undertakings. It was also observed that the fluctuations of coal stocks outside the mines make any direct numerical correlation between producers' deliveries and degree of cold impossible. On the contrary, deliveries of petroleum products, gas and especially electricity for heating are much more closely related to temperature changes. Though current methods are quite capable of yielding practically useful results, it would be desirable to seek a better understanding of the connexion between climatic factors and coal consumption by investigating, in particular:

- the incidence of atmospheric factors other than temperature (e.g. sunlight, humidity, wind and snow);
- personal behaviour (increase of comfort, variation of purchasing power);
- changes in housing, heating methods and even population (e.g. distribution between town- and country-dwellers).

In the United Kingdom, results indicate that thermal power stations are very much affected by temperature, the season and holidays, but that coke ovens are quite uninfluenced by the first two factors and almost quite by the third. As regards the effects of temperature, there is reason to believe that there are thresholds and halts, the effects being negligible below a certain temperature threshold. It seems necessary to study the effect of prolonged periods of cold or heat.

In Poland current work shows that:

- very high temperatures increase coal consumption for the generation of electricity, because of the high temperature of the cooling water;
- low temperatures increase coal consumption for space heating - a deviation of 1°C from the mean temperature computed over a long period causes a change in coal consumption of about 5 per cent;
- a mild winter - that is, one in which the temperature is above the mean - does not always reduce coal consumption, which also depends on the length of the heating season.

The study<sup>2/</sup> clearly shows the complexity of the relation between coal consumption and climatic factors such as the length and severity of the winter, general climatic conditions, economic conditions, etc. International estimation of the effect of a particular winter on coal consumption should therefore be made with caution, even in the household sector.

1/ The following observations are taken from a study made by the Group of Experts on Coal Statistics on statistical methods of measuring the influence of temperature on the consumption of coal (COAL/WP.3/Working Paper No. 12 and Add.1-3).

2/ COAL/WP.3/Working Paper No. 12 and Add.1-3.

4. Competition between the various sources of energy

(a) Western Europe

In many countries of Western Europe the energy market has been severely affected by the consequences of inflation, monetary difficulties hindering expansion of international trade, and the slowing-down of economic growth.

The combined effect of these factors has seriously reduced energy consumption in these countries, thereby masking the results of competition between the various sources of energy. Thus, in the countries members of the European Communities, there was an appreciable decline in the growth of petroleum products (4.6 per cent in 1971 against 12.6 per cent in 1970).

Information received shows that the prices of coal, fuel oil and natural gas are still rising.

The energy policy currently pursued by most of the coal-producing countries of Western Europe is in fact marked by a phasing-out of the coal industry, regulated by subsidies and, at least in the medium term, irreversible.

Thus, in the coal-producing countries of the European Communities taken as a whole, the aid given to the coal industry in 1971 was about US \$3.06 per ton (ranging from \$7.44 in Belgium to \$1.83 in the Federal Republic of Germany). In the United Kingdom, the Government has adopted a number of measures in support of coal.

In these conditions, competition between the coal produced and other sources of energy has become merely marginal, since the aims of production are more and more strictly defined and the fluctuations are very small.

Large variations in the demand for coal are increasingly covered by imports.

By contrast, the problem of the quality and price of energy seems to be increasing, particularly as a result of the serious restrictions that protection of the environment is beginning to impose (for example, in the United States).

(b) Eastern Europe and the USSR

The general picture in these countries is a continuous increase in coal production but a decline in the relative importance of coal in energy balances. Petroleum and its products are likely to play an increasing role, in view of the rapid development of motorization in the next few years. Another very important factor in the energy policy of Eastern Europe and the USSR is the projected increase in the harmonization and specialization of plans for the production and use of energy sources as part of a general programme to develop socialist economic integration.

D. INTERNAL DELIVERIES OF SOLID FUELS TO MAIN CONSUMING SECTORS

1. Hard coal (table C)

In Western Europe, total deliveries of hard coal dropped by 5.4 per cent (- 21.2 million tons). This appreciable reduction is chiefly due, as has been noted above, to the slowing-down of economic expansion in most countries of Western Europe. The largest reductions were in deliveries to industry and the household sector.

In Eastern Europe, deliveries rose by 2.4 per cent (in 1970 by 4.1 per cent). Industry was still the chief consuming sector (27 per cent of the total) and in 1971 recorded the largest increase (4.7 per cent).

2. Coke-oven coke

The slowing-down of iron and steel production in Western Europe caused a drop in sales and an accumulation of stocks at the coke ovens.

E. PRODUCTION, PITHEAD STOCKS AND PRODUCTIVITY

1. Production

The production of hard coal in Europe rose by 4 million tons, or 0.8 per cent (table D). As in the past, it continued to rise in Eastern Europe (+ 3.8 per cent) and to decline in Western Europe (- 0.8 per cent); but it rose by 2.3 million tons in the United Kingdom.

The USSR increased its production by 2 per cent. In the United States, production was reduced by 7.4 per cent by a miners' strike, as mentioned above. In 1971 the ECE region as a whole supplied 70 per cent of world production.

Output of brown coal rose by 3.7 per cent in the USSR and by 1.6 per cent in Western Europe. In Eastern Europe it remained at the 1970 level. The ECE region as a whole supplied nearly 97 per cent of world production.

Production of coke declined in Western Europe (- 5.7 per cent) and the United States (- 13.6 per cent). In the countries members of the European Communities, where the supply situation had been very tense, coke production fell to 65.9 million tons, that is by 6.1 per cent. In Eastern Europe it rose by 0.7 per cent and in the USSR by 3.8 per cent. The specific consumption of coke continued to fall in most countries; its general level was between 500 and 700 kg/ton of pig-iron and its lowest, in the Netherlands, was 475 kg/ton of pig-iron.

2. Pithead stocks

In Western Europe, pithead stocks rose from 20 million tons on 31 December 1970 to about 25 million tons on 31 December 1971 (8 per cent of production). Coke stocks also increased: in the countries members of the European Communities from 1.3 million to nearly 7 million tons.

In Eastern Europe, pithead stocks were 3 million tons at the end of 1970 and rose again to about 4.4 million tons at the end of December 1971 (2.3 per cent of production).

### 3. Productivity

The rate of increase of productivity in the European hard-coal industry, calculated from the man-year output (underground) was 2.3 per cent, slightly below that of 1970 and considerably below the 1964-1963 average (4.4 per cent) (tables E, F and G).

The loss of underground manpower in all Europe was 1.4 per cent.

The increased output in certain eastern European countries (Poland, Romania) was obtained with the same manpower and is therefore entirely due to an increase in productivity.

### F. THE EUROPEAN TRADE IN SOLID FUELS

The hard-coal trade in the ECE region declined in volume, but its value appears to have increased through the appreciable rise in export coal prices (table G).

The total volume of imports into the countries of Europe fell by 6.1 per cent, whereas in 1970 it had risen by 10.8 per cent; that of exports dropped by 2 per cent (- 0.9 per cent in 1970) (table H).

East-West trade declined: exports from Eastern Europe fell by 5.5 per cent and exports from the USSR by 9.5 per cent.

Trade in 1971 had the following features:

- a fall in exports from the United States;
- a further rise in exports from Eastern Europe and the USSR;
- a rise in coal imports into the ECE region from the rest of the world;
- an appreciable rise in the price of exported coal.

#### 1. Fall in exports from the United States

In 1971, total coal exports from the United States reached 56.6 million short tons, 14.3 million tons less than in 1970 (- 7.8 million tons to Japan and - 5.5 million tons to Europe). The main reasons for this reduction are as follows:

- weakening of the iron and steel industry's demand;
- the six-weeks' strike in the United States coal industry;
- the rise in the price of United States coal.

It is noteworthy that the total value of coal and coke exports fell very little below the 1970 figure (\$951.1 million in 1971 against \$1,040 million in 1970), because of the rise in the f.o.b. price of exported coal from \$13.40 a short ton in 1970 to \$15.79 in 1971.

#### 2. Further rise in exports from Eastern Europe and the USSR

Exports from Eastern Europe to Europe rose by 0.4 per cent. There was an appreciable rise in exports from Poland to the rest of the world, both in volume and in value. Total exports of hard coal from Poland in 1971 are estimated at 30.3 million tons, 9 per cent more than in 1970.

Exports from the USSR to Europe increased by 6 per cent.

### 3. Rise in exports from Australia and Canada

Total exports from Australia, which rose in 1966-1967 to 8.73 million long tons, rose further in 1970-1971 to 18.66 million tons, 2.2 million tons of which went to Europe (941,000 tons in the previous year). The exports to Europe consisted mainly of steam coal; but deliveries of coking coal increased (161,000 tons in 1969-1970 and 287,000 tons in 1970-1971).

Nearly all the exports of hard coal from Canada (4.39 million tons in 1970 and 7.73 million tons in 1971) went to Japan (4.12 million tons in 1970 and 7.4 million tons in 1971). The volume of exports to Italy and France increased and those to the United States decreased.

Total exports from South Africa rose from 1 million tons in 1970 to 1.44 million tons in 1971, and consisted mainly of anthracites (750,000 tons in 1970 to the countries members of the European Communities).

### 4. Appreciable rise in coal prices

In 1971 there was a general increase in prices of exported coal, of 15 to 30 per cent according to the country. An important factor was the rise in the ex mine prices of coal in the United States. The rise was especially large for coking coals; the price is now \$12.30 to \$20.95 per metric ton, whereas five years ago it was \$3.60 to \$10.45. 1/

The reference price of coking coal from the United States was fixed at \$23.90 per ton delivered c.i.f. North Sea ports, compared with \$23.00 in 1970. In the United Kingdom the price of coking coal was raised by 16 per cent as from 13 April 1971, and a further rise (of 7.5 per cent) was announced in March 1972.

In 1971, intra-European trade in coke (excluding the USSR) fell by about 11.2 per cent. A general decline in trade was observed except between the USSR and Eastern Europe (+ 7.4 per cent). Coal stocks increased 1/ in the countries members of the European Communities, rising to 7.67 million tons at the end of January 1972 from 1.77 million tons at the end of January 1971.

Despite these changes, coke prices continued to rise (along with the prices of other fuels and of electricity). By the end of March 1971, prices of smelting coke had passed the average 1970 prices by 8.7 per cent in Austria, 10.5 per cent in Belgium, 30 per cent in France, 15.5 per cent in Germany, Federal Republic of, 13.2 per cent in Italy and 6.4 per cent in the United States.

### G. SUMMARY AND CONCLUSIONS (table J)

#### 1. Western Europe and the United States

The period of high economic activity which had prevailed in Western Europe for several years gave place in 1971 to a marked slowing-down of the economic growth of many countries, and especially of the iron and steel industry, with a consequent slackening of the rate of increase of demand for energy, especially for hard coal and

1/ Charbonnages de France, Revue de Presse étrangère 1972, Nos. 5 and 8.

smelting coke. Another feature of the year 1971 was a general increase in energy prices. The rise in the prices of coking coal was particularly steep (15 to 30 per cent according to country). The combination of all these factors (economic growth, monetary inflation, energy prices, environment, weather) makes it impossible for the time being to give a more exact estimate of the rate of decline of the coal industry in Western Europe during 1971.

Western Europe's coal industry shows in fact a continuous and structural decline in hard-coal output (- 0.8 per cent in 1971 and - 4.6 per cent in 1970) and a slight increase in brown-coal output (+ 1.6 per cent in 1971 and + 1.5 per cent in 1970). Underground manpower is declining faster than output (- 2 to - 9 per cent in 1971 according to country) because of the steady increase in productivity; but this does not offset the rise in production costs (labour, marginal costs due to the fall in productive capacity, etc.). Pithead hard-coal stocks in the main producing countries of Western Europe rose by more than 30 per cent in 1971 (they are at 70 per cent of the level reached at the end of December 1969).

The fluctuations resulting from variations in demand and from competition between the different forms of energy have chiefly affected coal imports.

It should be noted in this connexion that trade between the ECE region and others increased, especially trade with Australia, whose exports to Europe rose by about 6 per cent. Imports from the United States fell considerably (about 30 per cent compared to 1970), to one of the lowest levels of the last 10 years. Imports from Poland were less (- 6 per cent to all Western Europe) but imports from that country into the countries members of the European Communities taken as a whole have continued to grow (+ 10 per cent). Lastly, it should be remembered that the western European coal market now consists chiefly (70 per cent) of two sectors: thermal power stations and coke ovens.

## 2. Eastern European situation

In 1971, as in 1970, coal output continued to increase. In Poland the hard-coal output reached 145.5 million tons, or 4 per cent more than in 1970; the brown-coal output was 34.5 million tons, or 6 per cent more than in 1970; in Czechoslovakia, the output of hard coal rose by 2 per cent and that of brown coal by 3.5 per cent; in Romania, the coal output is growing very quickly despite its levelling-cut in 1971 (in 1972 it will be 20 per cent higher than in 1971). As was stated above, the coal industry expansion policy is at present based in most of these countries on a numerically-stable labour force, the increase in output being chiefly due to a continuing improvement in productivity. Exports from Eastern to Western Europe dropped slightly, with variations, however, according to the importing and exporting countries and the types of coal involved (e.g. exports from Czechoslovakia of hard and brown coal increased but those of coke diminished). The total value rose substantially because of the general rise in the prices of exported coal.

The Soviet Union's coal output rose by 3.7 per cent. The country's total exports remained at their 1970 level of 24 million tons, but exports to Europe increased by 6 per cent (exports to Western Europe fell by 9.5 per cent, but those to Eastern Europe rose by about 15 per cent).

III. THE COAL SITUATION IN INDIVIDUAL COUNTRIES

## A. GERMANY, FEDERAL REPUBLIC OF

1. Development of primary energy consumption

The slackening of the boom at the end of 1970 led to a stabilization of energy demand in 1971. Primary energy consumption in 1971 amounted to 340.3 million tons of coal equivalent (tce); an increase of 1 per cent compared to the previous year.

Primary energy consumption in the Federal Republic of Germany  
(in million tce)

Form of energy	1969	1970	1971
Hard coal	101.7	97.3	91.0
Brown coal	29.9	30.6	29.3
Oil	160.4	178.6	185.7
Natural gas, other gases	13.1	18.4	24.0
Hydro-electric power	6.6	8.4	6.5
Nuclear energy	1.7	2.1	2.0
Other forms of energy	1.7	1.7	1.8
Total	315.1	337.1	340.3

2. Hard coal(a) Production

In 1971, the production of hard coal decreased slightly by 0.5 million tons to 110.8 million tons. This decline is attributable to the reduction in the number of workers underground by 2,491, not offset by the 1.9 per cent increase in the output per manshift underground.

In 1971, the production of hard-coal coke by mine and steelworks coking plants amounted to 37.5 million tons, or 2.4 million tons less than in the previous year. In addition, 2 million tons of gas coke were produced in town-gas plants in 1971. This was almost exclusively sold to the households and small consumers sector.

Owing to a decline in the activity of the iron and steel industry, coke production was higher than sales. That is why in the course of 1971 approximately 5 million tons of hard-coal coke had to be put into pithead stocks.

Crude steel production decreased from 45 million tons in 1970 to 40.3 million tons in 1971. During the same period, pig-iron production fell from 33.6 million tons to 30 million tons. Coke consumption in blast furnaces decreased from 18.8 to 15.6 million tons, and specific coke consumption in blast furnaces declined from 558 to 520 kg per ton of pig-iron.

(b) Labour force

The number of workers underground decreased in the course of 1971 by 2,491. The total number of persons employed, i.e., workers underground and other wage-earners, declined by 1,946.

(c) Output per manshift underground

Output per manshift underground in 1971 rose by 1.9 per cent as compared with the previous year. The average in 1971 was 3,828 kg; the output per man-year was 769 tons. It should be noted in this context that output per manshift and production are expressed in tons of saleable output, which means that all hard coal with an impurities content of over 20 per cent is converted into top-grade coal with an average calorific value of 7,000 kcal/kg. The output per man-year is based on the actual number of shifts worked underground.

(d) Hard-coal sales

Domestic sales of hard coal in 1971 were 1.8 million tons lower than in the previous year, those of patent fuel 1.1 million tons lower, and those of hard-coal coke 6 million tons lower.

Sales of hard coal to public power stations in 1971 rose by about 1 million tons. This increase was due both to the commissioning of new power stations, qualifying for subsidies under Federal Government legislation on the use of hard coal in electricity generation, and to increased demand. The legislation provides that power stations brought into operation between 1 July 1966 and 30 June 1971, and using hard coal to generate electricity for a period of ten years, are entitled to public subsidies. These subsidies are intended to cover the extra cost of hard coal over fuel oil. There is to be follow-up legislation to promote the building of up to 6,000 MW of new power station capacity based on hard coal instead of fuel oil. In 1971, hard-coal power stations with a combined capacity of 2,313 MW were brought into operation.

Sales to other power stations increased by 1.6 million tons. Here again the construction of new coal-fired power stations, benefiting from assistance under the generation of electricity legislation, has helped hard coal sales.

Sales to town-gas plants fell by 0.7 million tons in 1971 as a result of the closing down of one of them.

The sales of hard coal to the iron and steel industry (excluding deliveries to steelworks coking plants) decreased by 0.6 million tons. A considerable decrease of 1.9 million tons, in sales to the rest of industry, also occurred.

As a result of mild weather and the increased use of natural gas, sales of hard coal to household and small consumers shrank by 0.9 million tons and that of patent fuel by 1.1 million tons.

The iron and steel industry is the biggest consumer of hard-coal coke. Because of the industry's unfavourable economic situation, sales of hard-coal coke to this sector fell by 3.6 million tons in 1971. Hard-coal coke sales to the rest of industry were 0.6 million tons less, and sales to households and small consumers decreased by 1.6 million tons.

Further details can be found in table b.

(e) Pithead stocks

In 1971, pithead stocks of hard coal rose by 3.4 million tons and those of hard-coal coke by 4.9 million tons. The break-down by type of pithead stocks is shown in table c.

(f) Hard-coal consumption

The industrial consumption of hard coal, patent fuel and hard-coal coke fell by 5.8 million tons in 1971. Trends were different from one consumer sector to the other. Whereas the consumption in public power stations rose by 1.1 million tons, it fell in the other sectors altogether by 6.8 million tons. The iron and steel industry contributed most to this decrease, as a result of economic factors.

The industrial consumption of brown-coal briquettes decreased again in 1971, since the consumption of this fuel in industry, except for electricity generation is steadily falling for structural reasons. In 1971, the consumption of unprocessed brown-coal increased by 1.6 million tons. Consumption by public power stations rose by 2 million tons, whereas elsewhere in industry it fell by 0.4 million tons.

The details are shown in table d.

(g) Consumer stocks

In 1971, consumer stocks of hard coal, patent fuel and hard-coal coke shrank by 1.2 million tons. The largest hard-coal stocks were held by the public power stations and the rest of industry. Consumer stocks of brown-coal briquettes and unprocessed brown coal, on the other hand, are insignificant.

Table e gives a breakdown of consumer stocks.

3. Oil and natural gas

(a) Fuel-oil consumption

Fuel-oil consumption rose by 2.4 million tons in 1971. The household and small consumer sector was the biggest consumer (39.5 million tons). Industrial consumption amounted to 31.2 million tons. The consumption by public power stations rose to 5.5 million tons. Mineral fuel oils cover almost the whole of the demand for fuel oil. The share of tar oils made from hard coal and brown coal is negligible.

(b) Consumption of diesel fuel

The consumption of diesel fuel in 1971 rose by 0.7 per cent to 9.9 million tons.

(c) Natural gas consumption

In the last few years the consumption of natural gas has greatly increased. It rose from 19,400 million m<sup>3</sup> in 1970 to 24,200 million m<sup>3</sup> in 1971. The main users are public power stations, the iron and steel industry, the chemical industry and households.

(d) Consumer prices for fuel oil

Heavy-fuel-oil prices rose sharply in 1971, to an average of 117.20 DM/ton as compared with 88.77 DM/ton in 1970. Further price rises must be expected.

Light-fuel-oil prices, however, rose less in 1971. The average was 160.96 DM/ton, as compared with 151.52 DM/ton in 1970. The oil industry is trying to bring about an increase in the price of light fuel oil as well.

Table a

Production, persons employed and output in hard-coal mining

	1970	1971
1. Production in 1,000 tons	111,271	110,795
2. Workers underground	137,727	135,236
Workers in mining enterprises	176,152	166,224
Total number employed	249,733	247,787
3. Output per manshift underground, in kg	3,755	3,828
4. Output per man-year, in tons	770	769

Source: "Statistik der Kohlewirtschaft e.V."

Table b

Domestic sales and imports/exports of hard coal,  
patent fuel and hard-coal coke (thousand tons) 1/

	1970			1971		
	Hard coal	Patent fuel	Hard- coal coke	Hard coal	Patent fuel	Hard- coal coke
Public power stations	20,841	1	5	21,794	1	3
Power stations in the coal industry	12,551	-	0	14,133	-	0
Town-gas plants	3,191	-	5 <sup>1/</sup>	2,495	0	0
Transport	1,589	4	110	1,331	1	80
Iron and steel producers	2,066	2	21,251	1,510	4	17,607
Other industries	8,555	18	2,909	6,693	14	2,284
Households and small consumers	2,917	3,378	4,482	2,031	2,285	2,860
Military agencies	1,473	27	502	1,433	4	463
Domestic sales a/	53,183	3,430	29,264	51,420	2,309	23,297
Imports	9,719	300	589	8,187	124	372
Exports	15,772	306	9,984	14,085	215	8,838

a/ Excluding gas coke.

1/ Source: "Statistik der Kohlewirtschaft e.V.".

Table c

Pithead stocks in the Federal Republic of Germany (thousand tons)<sup>1/</sup>

	31 December 1970	31 December 1971
<u>Hard coal</u>		
Top-grade flame coal	142	6
Gas coal and gas flame coal (28-40 VM)	230	581
Bituminous coal (19-28 VM)	79	1,638
Forge coal B (3/4 bit., 15-19 VM)	22	1
Forge coal A (12-15 VM)	103	483
Lean coal (10-12 VM)	66	231
Anthracite (0-10 VM)	300	1,556
	942	4,296
<u>Hard-coal coke</u>	289	5,231
<u>Patent fuel</u>	5	14

1/ Source: "Statistik der Kohlewirtschaft e.V."

Table d

Industrial coal consumption in the Federal Republic of Germany (thousand tons)<sup>1/</sup>

	Hard coal	Brown-coal briquettes	Unprocessed brown coal	
	1970	1971	1970	1971
Transport	1,761	1,436	56	44
Public power stations	19,629	20,687	—	11
Town-gas plants	3,314	2,584	—	—
Iron and steel producers	23,464	19,994	98	111
Other industries	11,795	9,471	623	416
	59,963	54,172	777	582
			80,889	82,462

<sup>1/</sup> Source: "Statistik der Kohlewirtschaft e.V."

Table e  
Industrial stocks of solid fuel at the end of the year  
(thousand tons)<sup>1/</sup>

	Hard coal		Brown-coal briquettes		Unprocessed brown coal	
	1970	1971	1970	1971	1970	1971
Transport	103	86	1	0	-	-
Public hard-coal power stations	5,148	4,395	-	15	-	-
Town-gas plants	590	533	-	-	-	-
Iron and steel producers	1,182	906	10	6	0	0
Other industries	1,297	1,051	23	19	72	78
	8,320	6,971	34	40	72	78
Coke stocks at town-gas plants	218	352	-	-	-	-
Coal and coke stocks at steelworks coking plants	521	511	-	-	-	-
	9,059	7,834	34	40	72	78

1/ Source: "Statistik der Kohlewirtschaft e.V."

Table f

Fuel-oil consumption in the Federal Republic of Germany<sup>1/</sup>  
(thousand tons) <sup>2/</sup>

	1970	1971
Federal Railways	401	377
Inland navigation	10	10
Public power stations	5,223	5,471
Town-gas plants	41	41
Coal industry	165	251
Iron and steel producers	3,618	3,572
Other industries	28,073	27,422
Households and small consumers	36,729	39,513
Military agencies	652	690
	74,912	77,347
Break-down by types		
Mineral fuel oils		
light	44,036	46,552
medium and heavy	30,607	30,566
	74,643	77,118
Hard-coal-tar oils	269	229
Brown-coal-tar oils	-	-
	74,912	77,347
In hard-coal equivalent	107,521	111,081
Consumption of diesel fuel	9,786	9,859

1/ Excluding producers' own consumption and large-scale bunkering.

Consumption of natural gas (associated and non-associated)  
in the Federal Republic of Germany

in million m<sup>3</sup> (upper calorific value - 4,300 kcal/m<sup>3</sup>)

1970	19,387
1971	24,153

2/ Source: "Statistik der Kohlewirtschaft e.V."

Table g  
Heavy fuel oil prices for quantities of 500 tons and over

	1970 <sup>1/</sup>	1971 <sup>1/</sup>
	DM/ton	DM/ton
March	82.74	114.03
June	83.19	127.41
September	88.81	117.46
December	100.83	104.35
Total for the year	88.77	117.20

Light fuel oil prices for quantities of 5,000 litres  
and over

	1970 <sup>2/</sup>	1971 <sup>2/</sup>
	DM/ton	DM/ton
March	133.53	191.81
June	135.40	161.33
September	167.12	143.01
December	177.01	148.64
Total for the year	151.52	160.96

1/ Before VAT.

2/ After VAT.

Source: "Statistik der Kohlewirtschaft e.V."

B. AUSTRIA

Introduction

Energy consumption in Austria was only 0.8 per cent greater in 1971 than in the preceding year.

The following table illustrates the quantitative development in the supply of energy.

(thousand tce)	1970	1971
Solid mineral fuel (excluding coke)	6,732	5,702
Mineral oil products	11,935	13,272
Natural gas	3,475	4,042
Water power	6,330	5,672
Total supply	28,472	28,688

According to this table, therefore, the consumption of energy in the form of solid and liquid fuels, natural gas and water power amounted in 1971 to 28,688,000 tce.

Although the weather influences were approximately the same - the temperature average was only 1.8 per cent higher than the long-term average - precipitation was 16 per cent less than in 1970.

The consequences of an adverse water situation, combined with a 6 per cent increase in industrial production and a corresponding reduction in supply, had a very definite influence on the structure of energy consumption. The various types of solid mineral fuel were the most seriously affected, since 15.3 per cent less was consumed, and their percentage share in the total energy consumption decreased from 23.7 per cent to 19.9 per cent. As a result of the adverse water situation, the percentage share of water power fell from 22.2 per cent to 19.8 per cent. On the other hand, the percentage share of mineral oil products increased from 41.9 per cent to 46.2 per cent and that of natural gas from 12.2 per cent to 14.1 per cent.

There was a definite easing of the fuel situation in 1971 due to the relatively mild winter and to the above-average stocks constituted in the autumn of 1970.

This development was, moreover, favourably influenced by a considerable decline in the energy consumption growth. As a result of the adverse water situation, there was a considerable increase in the fuel consumption of thermal power plants.

1. Demand (deliveries)

Total deliveries - expressed in coal equivalent (not including coke produced from imported pit coal) - for the year under review amounted to 5,702,132 tce.

This was 15.3 per cent - approximately 1,029,000 t - below the figure for 1970. There had been an increase of 5.7 per cent (approx. 365,000 t) between 1969 and 1970 and a decrease of 3.1 per cent (approx. 204,000 t) between 1968 and 1969.

In 1971 there was a strong falling-off in demand.

In the transport sector, 12.4 per cent less solid fuel was purchased than in the preceding year. The change-over from solid fuel to electricity and diesel oil is not yet completed.

A 17.9 per cent increase in supply was recorded for the thermal power plant sector. As a result of the adverse water situation, and compared with 1970, 36.1 per cent more electricity was generated in thermal power plants. In 1971 public electricity supply works generated approximately 71.7 per cent more electricity from brown coal than in the preceding year.

As regards district heating power plants, 11.5 per cent less was supplied to them than in the preceding year.

Because of the falling-off in the demand for coke, the capacity of the Linz coking plant was not fully exploited. Deliveries of hard coal fell by 12.8 per cent.

Deliveries to industry were approximately 10.2 per cent less than in the preceding year. The type of fuel most seriously affected by the progressive substitution process was brown coal.

As a result of the relatively mild weather, and especially of the constitution of large stocks in the autumn of 1970, as well as of the change-over to other types of energy, 32.2 per cent less solid fuel was delivered to the household sector.

## 2. Supply

In the year under review the supply of hard coal in Austria was 17.8 per cent (approx. 594,000 t) below that for 1970. Particularly large decreases were registered in deliveries to the Linz coking plant (- 317,400 t), to the household sector (- 126,900 t) and to thermal power plants (- 46,900 t). But the remaining consumer groups did not buy as much as in the preceding year, either.

Brown-coal deliveries almost reached the level registered in the preceding year (- 0.3 per cent, = 12,200 t). Although 2.7 per cent more domestic brown coal was mined than in the preceding year, sales to the household sector decreased from 3,769,278 t by 31,500 t (approx. 0.9 per cent). Pitheads stocks increased during the period under review from 69,300 t to approximately 217,500 t. Stocks of brown

coal at the thermal power plants of the electricity supply network were reduced by 791,600 t and at the end of 1971 amounted to a total of approximately 804,600 t. The brown coal stocks of district-heating plants, on the other hand, had fallen at the end of the period under review only by 900 t, to 67,900 t.

Deliveries of Austrian brown coal were lower than in the preceding year: in the industrial sector (- 198,900 t), in the household sector (- 95,600 t), in the district heating plant sector (- 29,200 t), and in the transport sector (- 1,800 t). Only deliveries to thermal power plants were greater than in the preceding year (+ 294,000 t).

As the result of a falling-off in demand, the total supply in Austria of coke produced from hard coal was 12 per cent (approx. 337,100 t) less than in the preceding year. Supplies from domestic production fell by 10.1 per cent (approx. 177,700 t) but imports decreased by 15.5 per cent (approx. 159,400 t). This trend was caused primarily by a 27.9 per cent (approx. 237,600 t) decrease in the household sector. A less significant decrease of 6.5 per cent (approx. 126,300 t) was recorded for the industrial sector.

### 3. Export trade

The following table illustrates the changes in the import and export of solid fuel during the period under review.

(thousand t)	1970	1971	(in per cent)
Hard-coal briquettes	272	58	(21.3)
Hard coal	3,343	2,748	(82.2)
Brown coal	137	157	(114.0)
Brown-coal briquettes	551	440	(79.9)
Coke	1,030	871	(84.5)

Imports of hard coal from almost all the supplying countries (the Federal Republic of Germany, Poland, the USSR, the United States) were less, and in some cases very much less than in the preceding year. Only hard-coal imports from Czechoslovakia increased (by over 26 per cent).

As a result of the increased demand by thermal power plants, imports of brown coal increased by 14 per cent. These increases mainly affected imports from Hungary and Yugoslavia.

For the year under review, as compared with 1970, there was a 20.1 per cent (approx. 110,700 t) decrease in imports of brown-coal briquettes.

Brown-coal exports to the Federal Republic of Germany fell by 20.9 per cent to 6,156 t.

Imports of coke from all the supplying countries, except Hungary and Czechoslovakia, declined.

#### 4. Long-term trends in the supply of, and demand for, solid fuel

The demand structure will continue to shift in favour of mineral oil products and away from solid fuel. A temporary improvement in the market situation of some types of solid fuel due to the price of fuel oil will only be an insignificant obstacle to the substitution process. The rate at which Austrian brown coal will be displaced from the industrial and domestic markets will depend on the extent and timing of the closing-down of mines. In the coming years, natural gas will be the strongest competitor of fuel oil in the substitution process, and in some fields electricity will also be an important factor. It is thought that by 1975 a greater amount of imported gas will be available. A more rapid increase in consumption than was originally anticipated will mainly benefit fuel oil and natural gas. A greater supply of natural gas will lead to a lower rate of increase in the demand for fuel oil.

The demand for hard coal will fall from 3.56 million t to 2.6 million t in 1975, to be used almost exclusively in the production of coke. The demand for brown coal will fall from 4.4 million t (1970) to 3.8 million t (1975), of which only 2.8 million t will be Austrian. The rest will consist of imported brown coal and brown-coal briquettes, mainly for the household sector. Most of the Austrian brown coal will be purchased by thermal power plants.

Contrary to what had been expected the demand for coke should remain at the high level recorded for 1970 (2.8 million t). A marked increase is foreseen in the output of the iron and steel industry, whose capacity is being expanded. It is anticipated that the trend towards making the use of coke in blast furnaces more efficient will continue, and that the decline in the specific coke consumption will be balanced by the increase in output. Should the price of coke remain stable, or fall, demand in the household sector will only very slightly decline. It is anticipated, therefore, that household consumption in 1975 will remain at the same level as in 1970 (0.9 million t).

## B. BELGIUM

The table below shows the coal balance (hard coal only) for 1971 as compared with that for the previous year:

			(thousand t)	
	1971	1970	Difference	
			Tonnage	%
Production	10 960	11 362	- 402	- 3.5
Supplementary fuels	19	94	- 75	- 79.8
Imports	5 282	7 567	- 2 285	- 30.2
Available	16 261	19 023	- 2 762	- 14.5
Internal sales	15 711	18 910	- 3 199	- 16.9
Exports	377	548	- 171	- 31.2
Total sales	16 088	19 458	- 3 370	- 17.3
Movement of stocks				
- mines	+ 185	- 417		
- importers	- 12	- 18		

Before any comments are made on these statistics, attention should be drawn to the fact that the comparability of each of the main items in the coal balance for 1971 with the corresponding figure for 1970 is somewhat impaired by the strikes which affected 1970 more seriously than 1971, as can be seen from the table below:

Production losses due to strikes

	(thousand t)	
	1971	1970
Campine	295	974
Sud	82	61
Whole country	377	1 035

1. Production

In 1971, hard coal production fell by 402,000 tons, or 3.5 per cent, as compared with 1970. This over-all decline, however, is the resultant of contrary trends in the two producing coal-fields: an increase of production in Campine and a reduction in the Sud.

The increase of production in the Campine basin - producing coking coals - is to some extent theoretical and can only be attributed to the long strike (seven weeks) which occurred during the first quarter of 1970.

In the Sud, on the contrary, the reduction of output is essentially due to the closure, during the year, of two collieries representing a production capacity of 673,000 t.

The reduction in the numbers employed, which continued in 1971, but only in the Sud, also contributed to the decline in production.

The number of underground workers on the payroll (excluding foremen and supervisors) at the end of 1971 was only 23,479, as against 24,804 at the end of 1970, representing a reduction of 1,325, or 5.3 per cent.

Underground output per manshift (excluding foremen and supervisors) remained at practically the same level as in the previous year: 2,623 kg as against 2,630 kg in 1970.

At the end of 1971, 22 collieries were in operation in Belgium: five in Campine and 17 in the Sud.

The position of the Belgian coal industry again deteriorated during the year, income being still much lower than production costs, despite the fact that a number of increases in the price of Belgian coals - especially coking coals - raised prices by about 16 per cent.

It should be pointed out that those increases were in fact offset by higher wage costs due to the social welfare programme and to increases due to the tying of wages to the price index for consumer goods.

The collieries' losses have therefore continued to be completely covered by subsidies granted by the Belgian Government under its coal policy.

## 2. Imports

The table below shows that total coal imports amounted in 1971 to 5,282,000 tons, or 2,285,000 tons (30.2 per cent) less than in the previous year.

(thousand t)

	1971	1970	Difference	
			Tonnage	%
ECSC	3,534	4,591	- 1,057	- 23.0
Non-member countries	1,748	2,976	- 1,228	- 41.3
Total	5,282	7,567	- 2,285	- 30.2

As can be seen, the decline affects all sources of imports, and particularly imports mainly of coking coal, from non-member countries. These had been swollen in 1970 as a result of the Campine strikes.

Imports of American coking coal in 1971 declined substantially. They amounted to 812,000 tons, as against 2,015,000 tons in 1970. There was thus a reduction of imports amounting to 1,203,000 tons from this source alone.

### 3. Internal sales

Deliveries of Belgian and imported coal from all sources to the Belgian coal market declined in 1971 by 3,199,000 tons, or 16.9 per cent, as compared with 1970.

The slackness of demand is partly due to the slowing down of economic activity in 1971. The size of the regression may, however, reflect an acceleration of the structural decline which, in recent years, had been estimated at about 5.5 per cent per annum.

The table below shows the trends in the main consumption sectors:

(thousand t)

	1971	1970	Difference		%
			Tonnage	%	
Own consumption	133	129	+ 4	+ 3.1	
Allowances to miners	238	288	- 50	- 17.4	
Mine power stations	768	792	- 24	- 3.0	
Coke ovens	8 494	9 959	- 1 465	- 14.7	
Patent fuel plants	530	683	- 153	- 22.4	
Public power stations	2 050	2 470	- 420	- 17.0	
Railways	22	29	- 7	- 24.1	
Industry	619	684	- 65	- 9.5	
Household sector	2 857	3 876	- 1 019	- 26.3	
Total	15 711	18 910	- 3 199	- 16.9	

### 4. Coke ovens

Consumption by coke ovens declined very sharply in 1971 for a number of reasons:

- (a) reduced activity in the iron and steel industry;
- (b) withdrawals by coke ovens of considerable amounts from the stocks they had built up for security reasons in 1970;
- (c) subsidiarily, the strike at a large iron and steel works in the Liège area during the last few weeks of the year.

Production of blast-furnace coke, at 6,783,000 tons, was 4.7 per cent lower than the 1970 figure of 7,119,000 tons.

Deliveries of Belgian and imported coke to the internal market amounted, in 1971, to only 7,203,000 tons, as against 7,876,000 tons in 1970. This represents a drop of 673,000 tons, or 8.5 per cent.

Of these quantities, the tonnages delivered to the iron and steel industry amounted in 1971 to only 6,638,000 tons, as against 7,073,000 tons in 1970, i.e. they were 435,000 tons, or 6.2 per cent, less.

Raw steel production amounted in 1971 to 12,445,000 tons as against 12,607,000 tons in 1970, showing a slight decline of 162,000 tons, or 1.3 per cent.

After two years of tightness, the market for coking coals can thus be said to have slackened appreciably in 1971.

#### 5. Power stations

Deliveries of coal to power stations again declined in 1971, although not so much as in 1970. They amounted to 2,050,000 tons as against 2,470,000 tons in 1970, thus showing a fall of about 420,000 tons, or 17 per cent.

That situation is due to the steady decline in supplies of Belgian low-grade products owing to the decline in production and to the increased use of petroleum products and natural gas.

#### 6. Households

The market for household coal was particularly depressed in 1971. Sales to households amounted to only 2,857,000 tons as against 3,876,000 tons in the previous year, i.e. there was a drop of 1,019,000 tons, or 26.3 per cent.

Thus, the rate of decline, which had been of the order of 5 per cent in recent years, accelerated sharply in 1971. This unfavourable trend is largely due to the pressure of competing sources of energy - liquid fuels and, more particularly, natural gas imported from the Netherlands - and to better weather conditions.

At the present time the household market still remains slack. Although the rate of decline has somewhat slowed down, it is still in the neighbourhood of 17 per cent if the figures for the first four months of 1972 are compared with those for the corresponding period of 1971.

#### 7. Exports

Exports again declined very appreciably in 1971 as compared with 1970, the fall amounting to 171,000 tons, or 31.2 per cent, as can be seen from the table below:

(thousand t)

	1971	1970	Difference	
			Tonnage	%
ECSC	373	539	- 166	- 30.8
Non-member countries	4	9	- 5	- 55.6
Total	377	548	- 171	- 31.2

#### 8. Stocks

Pithead stocks of hard coal, which were entirely used up in 1970, rose again by some 185,000 tons and amounted to 400,000 tons at the end of 1971.

The breakdown by quality of these stocks at the end of 1971 was as follows:

(thousand t)

	End 1971	End 1970	Difference
Graded sizes: anthr., anthr. b and lean	15	9	+ 6
Fines: anthr., anthr.b and lean	53	37	+ 16
Fines and graded sizes: A and B bit. (20-28½ and > 28½ VM)	217	56	+ 161
Fines and graded sizes: ¾ and ½ bit. (16-20 and 12.5-16 VM)	1	11	- 10
Low-grade products (all classes)	114	102	+ 12
Total	400	215	+ 185

For information, we provide below some statistics on the situation in 1971 concerning oil and natural gas, which are the main sources of energy competing with coal in Belgium.

#### 9. Inland deliveries of oil energy products

(thousand t)

	1971 (provisional figures)	1970	Difference	
			Tonnages	%
Gas oil and light fuel oil	8,100	7,976	+ 124	+ 1.6
Residual fuel oil (including pitch)	8,875	8,848	+ 27	+ 0.3
	16,975	16,824	+ 151	+ 0.9

#### Imports of natural gas Tcal (gross calorific value)

1965:	-
1966:	733
1967:	4 228
1968:	11 198
1969:	23 629
1970:	37 740
1971:	52 542

D. SPAIN

1. General review of the trend in 1971 - General economic activity, activity in the steel industry, energy consumption, share of solid fuels in total energy consumption

The economic recession which had begun towards the middle of the previous year intensified in 1971.

The increase in gross industrial product was smaller than in 1970, although the economic recession had already begun in the second half of that year.

A feature of 1971 was what is known as a growth gap - the difference between what the economy actually produced and what could have been produced with the full use of resources.

Moreover, as the trend in the Spanish economy occurred in the context of a similar trend in the world economy, the adverse effects were the more marked.

The policy adopted in August by the United States, and the international monetary crisis, intensified this climate of world-wide recession.

The Spanish economy's recovery therefore came up against the tide of world economic and business trends.

Growth in the iron and steel sector during the period under review was similar to that of the Spanish economy as a whole, but more marked because of the special relationship between GNP growth and steel consumption.

The drop in the domestic consumption of steel was reflected in a lower level of capacity utilization than forecast.

The slowing down of national economic development also affected electricity demand, which increased by only 6.5 per cent, compared with 10.4 per cent in 1970.

The share of solid fuels in total primary-energy source demand was about 15.1 million tce, or 22 per cent.

2. Demand

(a) Trends in solid fuel demand, consumers' stocks and consumption by sectors

Coal demand in 1971 can be regarded as having been normal in all consumption sectors.

Owing to the general situation in the steel industry, coke production did not reach the forecast level; the increase in coking-coal consumption could only be described as moderate, despite a 16 per cent increase in pig-iron production.

Conditions in the steel industry did not, however, affect the domestic market, except as regards coking-coal imports, which were 16 per cent lower (in physical units) than in the preceding year.

Net domestic consumption of solid fuels with breakdown by sectors was as follows (hard coal, anthracite and brown coal in millions of tons):

- steelworks and coking plants	5.55
- thermal power stations	7.31
- miscellaneous industries and households	3.64

At the end of the year, consumers' stocks (hard coal, anthracite and brown coal) totalled (millions of tons):

- steelworks and coking plants	0.42
- thermal power stations	2.72
- miscellaneous industries and households	0.51

(b) Factors responsible for this trend

These include changes in the relationship between the prices of coal and competing fuels, weather changes, hydraulicity, Government action and subsidies.

At the beginning of the year, consumption in the iron and steel sector was 5,885,000 tons of coking coal, including about 2,500,000 tons domestically produced. The proportion of domestically-produced coal used remained constant throughout the year.

Coal demand by thermal power stations and the household sector, however, showed strong seasonal fluctuations, corresponding to changes in hydraulicity in the case of the former (1971 was a very wet year), and in weather conditions in the case of the latter (1971 was not a very cold year).

Consumption reached its peak in December, when thermal power stations were operating to capacity and household consumption was high.

3. Supply

(a) Total hard-coal production

Hard coal and anthracite production reached 10.67 million tons, including about 2.5 million tons of coking coal, the remainder consisting of coal intended mainly for thermal power stations (4.9 million tons), bunkering, small-scale industry and households (3.2 million tons).

At the end of the period, pithead stocks totalled 1.3 million tons.

Productivity reached the following levels (kg/day):

	Over-all	Underground	Open-cast
Hard coal	876	1,451	3,094
Anthracite	988	1,373	2,423

The labour cost per ton of merchantable production was:

- hard coal	934 pesetas
- anthracite	650 pesetas

(b) Coke

At the end of 1971, coking capacity was about 4.6 million tons, but actual production was only about 4 million tons because of the situation in the iron and steel industry.

Coke demand and production are tending to balance each other. It can therefore be concluded that, on the whole, steel enterprises are self-sufficient in coke.

(c) Brown coal

Production, 3,062,000 tons;

Pithead stocks at the end of the period, 30,000 tons;

Number of collieries, 45; concentration rate, 68.04;

Labour costs per ton of merchantable production, 337 pesetas;

Productivity (kg/day):

Over-all

Underground

Open-cast

1,783

2,504

6,196

4. International trade

Spain lacks coking coal; import quotas are fixed every year in the light of the steel industry's demand for coking coal and domestically-produced coal.

Generally speaking, solid fuel exports are on a small scale and, like imports of anthracite and brown coal, they depend on the economic situation.

Imports and exports in the past five years were as follows (million tons):

External Trade (hard coal)

	<u>Imports</u>	<u>Exports</u>
1967	1.20	-
1968	2.03	-
1969	2.18	-
1970	3.42	0.58
1971	2.89	0.10

Coal is imported solely to fill the gap between coking-coal supply and demand in the steel industry; it comes mainly from the United States and Poland.

5. Long-term trends in coal supply and demand

Coal production forecasts for the four years of the third Economic Development Plan are as follows:

Probable production trends (million tons)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Hard coal	9.95	10.15	10.50	10.60
Anthracite	3.15	3.25	3.30	3.30
Brown coal	3.60	3.55	3.50	3.40
Total	<u>16.70</u>	<u>16.95</u>	<u>17.30</u>	<u>17.30</u>

During the period 1972-1975 coal production is to be adapted to demand as far as possible. In the case of anthracite and brown coal, such an adjustment is practicable; but the case of ordinary hard coal is different: coking coal production cannot reach the forecast consumption level, and the gap will have to be filled by imports.

During the period under review, total coal production should increase by about 8 per cent.

Coal consumption depends on demand in the following sectors:

- (1) The iron and steel industry, which is manifestly expanding;
- (2) Thermal power stations, whose consumption is also increasing;
- (3) The tertiary sector and households and the rest of industry, where demand is tending to decline.

In that context, the consumption forecasts are as follows:

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
<u>Ordinary hard coal</u>				
Iron and steel industry	6.80	7.30	7.35	7.20
Thermal power stations	3.15	3.65	3.65	4.10
Other consumers	3.10	2.90	2.75	2.65
 Total hard coal	 13.05	 13.85	 13.75	 13.95
<u>Anthracite</u>				
Thermal power stations	1.80	2.00	2.10	2.20
Other consumers	1.35	1.30	1.20	1.10
 Total anthracite	 3.15	 3.30	 3.30	 3.30
<u>Brown coal</u>				
Thermal power stations	3.00	3.00	3.00	3.00
Other consumers	0.60	0.55	0.50	0.40
 Total brown coal	 3.60	 3.55	 3.50	 3.40
 Total coal	 <u>19.80</u>	 <u>20.70</u>	 <u>20.65</u>	 <u>20.65</u>

Over-all, there will be an unfavourable supply and demand balance, with an annual deficit of about 3 million tons; that quantity corresponds exactly to the present coking coal deficit, which has to be made good by imports.

Forecasts of total investment (million pesetas)

<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
3,335	2,525	1,933	1,382

UNITED STATES OF AMERICA

Production of bituminous and brown coal was 552.2 million short tons, as against 602.9 million in 1970. This drop in output was due to a long work stoppage during the wage negotiations of October and November 1971.

Before and after that strike, other work stoppages and lower productivity in general, particularly in the deep mines, were also instrumental in reducing output.

Total coal consumption by the main industrial sectors was 4.3 per cent lower in 1971 than in 1970 (494.9 million tons compared with 517.2 million). Coal utilization in the electric power stations, however, which form the biggest consumption sector, rose by 1.8 per cent. On the whole, though, with some relatively insignificant exceptions, the year ended with a downward trend in all the other large consumption sectors.

Although the prices of the types of coal immediately available for sale dropped below the high levels achieved in 1970, coal prices in general rose, owing to rising wages and the increase in other costs resulting from the drop in productivity in the underground mines, and to the additional expenses due to the application of the legislation on work safety and health and on the protection of the environment. Prices then became firmer as the improvement in supplies and the weakening of demand had a stabilizing effect on the market.

Coal exports in 1971 declined appreciably under the influence of the important economic and fiscal changes which took place on the world scene and were reflected in a sudden fall in demand for coking coal from abroad.

At 57.6 million tons, total exports of bituminous coal in 1971 were 20 per cent less than in 1970, when they reached 70.9 million. The decline was mainly due to smaller purchases by Japan and the countries of the European economic communities. Exports of coal to other big markets were also generally smaller, except only in the case of the United Kingdom, to meet whose urgent requirements 1.7 million tons were exported.

Production of anthracite amounted to 8.7 million tons in 1971, which was 2.3 per cent less than in the previous year. Anthracite consumption is estimated to have been 7.3 million tons, or 11 per cent less than in 1970.

Anthracite exports in 1971 amounted to 671,024 tons.

In 1972, production of bituminous and brown coal was 301.8 million tons for the first six months, i.e. 2.2 per cent less than in the corresponding period of the previous year. The drop in production during the first half of 1972 was due to poor weather conditions, floods, and the enforcement of the Federal Coal Mine Health and Safety Act. There was also a general decline in demand in the main coal-consuming sectors.

Although not all the statistics have been collected, it can already be stated that coal consumption by electric power stations increased, partly offsetting the decline in consumption by the coke ovens (42.9 million tons, or 3.7 million less than in the corresponding period of the preceding year), the drop in exports (27.1 million tons, i.e. - 2.5 million tons) and the reduction in deliveries to the industrial sector. Total demand seems to have fallen off by about 5 per cent.

During the first half of 1972, stocks of coal held by consumers rose well above their extremely low level in the first quarter of 1971. By building up stocks in anticipation of the strike, consumers made sure of being well supplied during the first half of 1972. Retail stocks remained stationary on the whole. Increased supplies of coal owing to the reduction of 2.5 million tons in exports made more coal available for the home market. The decline in exports was mainly due to smaller deliveries to Japan, where a cut-back in the plans for stepping up steel production had a sharp impact on exports from the United States.

F. FRANCE

1. Factors that affected the coal market in 1971

The coal market deteriorated very appreciably in 1971 as a result of the slackening of activity in the iron and steel industry and of the use of other fuels by industry and households.

(a) From the weather point of view:

The temperature severity index, calculated on the basis of degree-days, was 106, or 6 per cent higher than normal. The consumption of fuel for space heating was therefore slightly above average in the calendar year 1971. 1/

Hydraulicity was 10 per cent lower than average. The consumption of coal by thermal power stations was consequently, for this reason too, also above the average. But despite an increase of 12 per cent in the output of thermal power stations, coal consumption was slightly less than in 1970 owing to the increased consumption of fuel oil.

(b) From the economic point of view:

The industrial production index (base 1962 = 100) rose by 5.2 per cent in 1971 compared with the previous year.

Activity in the iron and steel industry fell by about 5 per cent.

Total consumption of energy (excluding motor fuels) by final consumers in France increased from 169.8 to 175.6 million tce 2/, i.e. by 3.4 per cent, in 1971 as compared with the previous year.

The share of coal in final consumption fell from 17.8 per cent to 14.1 per cent.

The share of coal in total primary energy requirements (excluding motor fuel) is larger, owing to the still considerable tonnages burnt by thermal power stations. At 52.8 million tons in 1971, that share was 26 per cent, as against 29 per cent in 1970.

The trend is towards the concentration of consumption in two sectors - iron and steel and thermal power stations - and to a decline in the other sectors.

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1/ The same does not apply to the 1971/1972 heating session, for which the severity index was only 97, since the first quarter of 1972 was much milder (92) than the first quarter of 1971 (109).

2/ These figures form part of a new series which assigns to electric power a conversion factor of 0.333 instead of 0.4 tce per 1,000 kWh.

In the coal-fields, coal output fell by 10.9 per cent, or by more than was forecast, the reason being the stationary output per manshift.

## 2. Productivity and employment

(a) Production. In 1971, hard-coal production amounted to 33 million tons, compared with 37.3 million tons in 1970, while production of brown coal, including production at privately-owned mines, stood at 2.8 million tons as in 1970.

The total output of hard and brown coal amounted to 35.8 million tons in 1971 as against 40.1 million tons in 1970, thus showing a decline of 10.9 per cent. 1/

In 1971, the breakdown of production by category of fuel was as follows:

(in million tons)

Anthracite and lean	9.1
1/4 bit. and 1/2 bit (12 - 22 VM)	1.4
Bit. and flame (22 - 34 VM)	20.2
Dry flame (-34 VM)	2.3
Brown coal	2.8

### (b) Manpower (nationalized hard and brown-coal mines)

The staff on colliery payrolls continued to fall steadily. On 31 December, the numbers of workers were as follows:

Thousands employed	1968	1969	1970	1971
Workers:				
Underground	80.8	71.7	64.3	58.8
Surface	38.2	34.9	31.6	30.7
Foremen and engineers:				
Underground	7.8	7.4	7.0	6.5
Surface (1)	6.9	6.6	6.2	6.1

(1) These figures do not include persons employed at auxiliary plants.

In 1971, there was a fairly marked reduction in the rate of the decline in numbers employed due to the drop in the number of departures.

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1/ The percentages are based on the tonnage figures.

(c) Output per manshift

Output per manshift underground has remained practically unchanged from one year to the next: 2,704 kg in 1971 and 2,702 kg in 1970.

3. Stocks(a) Pithead stocks

In 1971, total pithead stocks fell by 1,248,000 tons. Stocks of merchant coal on the ground increased slightly (+ 28,000 tons), whereas stocks of low-grade products, which had been reduced by 1,091,000 tons in 1970, suffered a further decline of 1,454,000 tons in 1971.

On 31 December 1971, the pithead stocks situation was as follows:

	(in thousand tons)
Total hard-coal stocks	4,841
of which:	
merchant coal on the ground	2,130
low-grade products on the ground	2,234
Total brown-coal stocks	264
Stocks of blast-furnace coke:	
small-size	230
large coke	279
Stocks of semi-coke	1
Stocks of patent fuel (distillation process)	5
Stocks of patent fuel (hard coal)	121

Coke stocks reached a new record level: stocks of the small sizes nearly doubled, and those of large coke quadrupled.

The breakdown by categories of total stocks of French hard and brown coal on 31 December 1971 was approximately as follows (thousand tons):

Anthracite and lean (groups I and II)	:	2,043, of which:	graded	290
			washed fines	424
			other	1,329
Bituminous (groups V and VI)	:	2,543, of which:	graded and washed fines	1,081 1/
			other	1,462 2/
Semi-bit. and flame (groups III and IV)	:	255, of which:	graded and fines, 20% of inert substances	85
			other	170

1/ Corrected figure. On 31 December 1970: 900

2/ Corrected figure. On 31 December 1970: 2 107

Brown coal	:	264, of which:	graded and fines,	
			20% of inert	
			substances	53
			other	211

The total stocks of merchant coal on the ground available for sale amounted to only 1,220,000 tons, which is low.

In addition, the Saar Coal Sales Office possessed stocks totalling 168,000 tons on 31 December 1971, as against 112,000 tons on 31 December 1970.

#### (b) Movements of stocks of main consumption sectors

A comparison of estimated stocks of the main consumption sectors on 31 December 1971 and on 31 December 1970 gives the following result:

	thousand t	
	31 December 1970	31 December 1971
Electricité de France	3 114	3 367
SNCF	16	717
Iron and steel industry	1 561	1 426
Households and small industry (retail trade and cellars)	(No data available. Quantities should be of the order of 3 million tons, with some decline between the beginning and end of the year.)	
Industry (estimate)	830	600

#### 4. Imports

In 1971, France imported 16,830,000 tons of solid mineral fuels (as against 17,600,000 tons in 1970) made up as follows:

13,635,000 tons of hard coal  
2,796,000 tons of coke  
146,000 tons of hard-coal patent fuel  
253,000 tons of brown-coal briquettes.

Thus, between 1970 and 1971, imports fell by about 800,000 tons and effective deliveries by about 1 million tons (allowing for movement of stocks).

Of the various consumption sectors, only the electric-power sector received more foreign coal in 1971 than in 1970 (+ 700,000 tons or + 31 per cent).

The iron and steel industry received 200,000 tons of hard coal more (or + 26 per cent), excluding coke fines, and 500,000 tons of coke less (- 17 per cent); consumption by industry fell by 200,000 tons (- 27 per cent) and by households by 500,000 tons (- 21 per cent).

Deliveries of coke fines fell by 600,000 tons (- 8 per cent).

## 5. Exports

Exports in 1971 amounted to 1,526,000 tons (as against 2,150,000 tons in 1970), comprising:

828,000 tons of hard coal  
20,000 tons of brown coal  
608,000 tons of coke  
70,000 tons of hard-coal patent fuel.

The fall in exports mainly affects exports to the European Economic Community (- 500,000 tons).

## 6. Consumption of different forms of primary energy

### (a) Solid mineral fuels:

The table below shows coal-consumption trends during the last four years, together with estimates for 1972 (in million tons of hard coal + coke + patent fuel + brown coal).

	1968	1969	1970	1971	Forecasts 1972
Apparent consumption	61.7	61.4	58.3	52.8	-
Real consumption	62.6	62.6	57.9	52.9	-
Real consumption corrected for weather	62.4	62.4	58.5	51.6	47/48
Weather conditions					
- Hydraulicity	1.07	1.05	1.11	0.90)	assumed to
- Severity of temperature	1.06	1.06	1.05	1.06)	be normal

(b) Liquid fuels

Apparent consumption of refined products (excluding bunkering) is given in the table below (in million tons):

	1969	1970	1971
Total consumption	70.60	82.03	90.01
of which: non-energy producing products (bitumen, lubricants)	6.88	8.03	8.36
- gas oil, diesel oil	4.27	4.01	5.13
fuel oil	44.51	53.09	59.06

The growth rate of total fuel-oil consumption compared with that of 1970 was 11.2 per cent, whereas it had been 19 per cent between 1970 and 1969 and 14 per cent in the year before.

The increase was mainly in heavy fuel oil (+ 20 per cent), the rate being only + 6.5 per cent for household fuel oil, while consumption of light fuel oil was low, amounting to about 2 million tons, and the variations in it were of no great significance.

Consumption increased by 17 per cent in industry and 7 per cent in the household sector, but dropped by 11 per cent on the railways.

Fuel-oil consumption by public power stations increased sharply again in 1971 (+ 40 per cent) after its 73 per cent leap in 1970.

(c) Gas

Total sales of gas <sup>1/</sup> amounted, in thousand million thermies, to 113 in 1971 (including 16.2 for Electricité de France), as against 95.8 (including 14.1 for EDF) in 1970.

(d) Hydro-electricity

A hydraulicity 10 per cent below normal in 1971 produced a sharp fall in the output of hydro-power stations: 48.8 TWh, as against 56.6 TWh in 1970, or - 13.8 per cent.

Total annual consumption of electric power (including losses) was 147.4 TWh in 1971 as against 140 TWh in 1970, or only 5.3 per cent more.

"Consumption + losses" in 1971 was 1.92 times higher than in 1961.

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<sup>1/</sup> Excluding direct sales from coke ovens and refineries (16,200 million thermies in 1970). The figures given in previous reports refer only to sales by Gaz de France.

## 7. Coal deliveries by sector

The table below shows trends in coal deliveries to the various sectors since 1961 (excluding the household sector, which is dealt with in a subsequent paragraph):

(million tons)

	EDF (Electricité de France)	SNCF (Traction)	GDF (Gaz de France)	Industry	Iron and steel industry	
					Blast-furnace coke	Sundry fuels
1961	4.8	2.7	2.6	13.9	13.9	2.3
1962	6.9	2.4	2.1	13.7	12.8	2.7
1963	5.9	2.3	2.0	13.9	12.1	3.1
1964	7.9	2.1	1.4	12.7	12.8	3.1
1965	7.8	1.5	1.0	11.7	12.3	3.2
1966	8.6	1.2	0.8	10.7	11.6	3.1
1967	10.7	0.8	0.6	9.7	10.9	3.2
1968	11.1	0.7	0.3	8.9	11.0	3.2
1969	11.9	0.5	0.01	8.5	11.8	3.4
1970	8.8	0.3	0.01	7.0	11.9	3.5
1971	8.7	0.1	-	5.2	10.8	3.5

### (a) Electric power

The above table shows the variations in coal consumption by thermal power stations belonging to Électricité de France.

In 1971, coal consumption by these power stations amounted to 8,700,000 tons of coal, to which should be added 1,100,000 tons of recent brown coal, giving a total of 9,800,000 tons, which is 200,000 tons less than that of 1970, whereas the total output of the thermal power stations sharply increased (+ 12 per cent) owing to a hydraulicity 10 per cent below the average.

During the last two years, the consumption of fuel oil has increased substantially in Électricité de France power stations, rising from 25 per cent of total fuel consumption in 1969 to 50 per cent in 1971. During the same period, the share of coal fell from 64 per cent to 40 per cent.

The Blanzy collieries, which possessed two sets of 40 MW each, put a 250 MW set into service in 1971.

(b) Rail transport

In 1971, the consumption of coal for steam traction continued to fall and now amounts to only 100,000 tons.

(c) Coke manufacturing (Gaz de France)

The last coal-distilling gas-works still in service in France was finally closed down in May 1971.

(d) Industry

Industrial activity grew at a moderate rate - of the order of 5 per cent - between 1970 and 1971. The growth rate for total consumption of energy in industry was higher than this rate of 5 per cent, but coal deliveries again sharply decreased, passing from 7,040,000 in 1970 to 5,295,000 in 1971, made up as follows:

3,290,000 tons of hard coal as against	4,660,000 tons in 1970
450,000 tons of old brown coal as against	480,000 " " "
1,540,000 tons of coke	" " 1,870,000 " " "
15,000 tons of patent fuel	" " 30,000 " " "

These deliveries were 24.8 per cent less than those of the previous year, and there had already been a reduction of 16.9 per cent between 1969 and 1970.

Formerly, only hard coal was affected in practice by the fall in consumption, but in 1971 the trend extended to coke, the level of consumption of which, after remaining stable between 1.8 and 1.9 million tons during the five previous years, fell to 1,540,000 tons in 1971.

The share of coal in fuel supplies to industry is falling rapidly. This is due to the competition of other sources of energy, in particular fuel oil.

(e) Iron and steel

Activity in the iron and steel industry slackened appreciably in 1971, the output figures being 22,900,000 tons of crude steel, as against 23,800,000 in 1970 (- 3.8 per cent) and 18,300,000 tons of pig-iron as against 19,200,000 tons (- 4.7 per cent).

In addition, specific coke consumption was reduced by 5 per cent.

The effects of these two factors led to a fall of nearly 10 per cent in the consumption of blast-furnace coke: 10,800,000 tons in 1971 as against 11,900,000 tons in 1970.

Total deliveries of coke of all sizes amounted to 11,700,000 tons as against 13,400,000 tons in 1970.

In its own coke ovens, the iron and steel industry used 6,300,000 tons of coal to produce 5,100,000 tons of coke, of which 4,800,000 tons were delivered to the iron and steel industry itself. The steel plants reduced their coke stocks by 150,000 tons (whereas stocks had been increased by 350,000 tons in 1970).

The remainder of the iron and steel industry's coke requirements was covered by deliveries from colliery coke ovens (4,300,000 tons) and by imports (2,600,000 tons).

(f) Households

The trend of deliveries to households is shown in the following table (in million tons):

	Total deliveries all types of coal	Severity of winter
1961/1962	16.6	101
1962/1963	19.2	140
1963/1964	22.2	113
1964/1965	16.8	111
1965/1966	15.7	97
1966/1967	13.6	92
1967/1968	13.6	104.5
1968/1969	12.9	106
1969/1970	11.6	107.6
1970/1971	10.8	107.7
1971/1972	8.4	97.3

Total deliveries of solid mineral fuels during the 1971/1972 season amounted to 8.4 million tons, or 22.3 per cent less than in the previous season. The winters of the last two seasons differed considerably in severity. After correction for weather, the reduction in consumption can be estimated at about 15 per cent, which corresponds to the upper end of the bracket (10 to 15 per cent) given in the previous report for the structural reduction in household consumption of coal.

There have been big drops in the consumption of all categories of solid fuel (hard coal, coke, patent fuel). In particular, during the last season (1971/1972), the fall in the consumption both of ovoids (- 600,000 tons, as compared with - 240,000 tons during the 1970/1971 season) and of household coke (- 220,000 tons as compared with - 90,000 tons) was 2.5 times greater than the average annual fall during the four preceding seasons (1967/1968 - 1970/1971).

## 8. The problem of coke

In 1971, apparent consumption of coke 1/ in France was of the order of 14.3 million tons (as against 16.8 million tons in 1970), including:

11.7 in the iron and steel industry	as against 13.4 in 1970		
1.5 in industry	" " 1.8 "		
0.4 in households	" " 0.7 "		
0.7 for other uses	" " 0.8 "		
(internal uses, etc).			

Domestic production was 12.5 million tons as against 14.2 million tons in 1970. Producers and importers laid 300,000 tons to stocks, whereas in 1970 they withdrew 100,000 tons from stocks. Imports amounted to 2.7 million tons (as against 3.4), exclusively from the EEC countries. Exports, at 600,000 tons, did not attain the record levels of 1969 and 1970 (900,000 tons) but remained well above the figure for previous years (200,000).

Coke was produced from 9.7 million tons of French coal and 6 million tons of imported coal.

As indicated above, the demand for coke in France amounted to 14.3 million tons in 1971 as against 16.8 million tons in 1970.

This fall of 2.5 million tons - essentially due to the slackening in the iron and steel industry - is very large. It should be compared with the moderate downward trend of the ten previous years, when demand remained between 18 and 19 million tons from 1961 to 1965 and between 16 and 17 million tons from 1966 to 1970.

About 85 per cent of the demand is covered by domestic production and 15 per cent by imports, but about 40 per cent of the coking coals used in French coke ovens is imported.

The siting of the oldest coke ovens was determined by the position of mines and of iron and steel works. These coke ovens, therefore, are almost all situated inland and, until very recently, they were supplied mainly by French coal.

As a result of the decline in French coal production and the expansion of the coastal iron and steel industry, this situation has been changing in recent years.

Steel firms are building new plants in coastal areas, and they tend naturally to build also new coke ovens, which will be mainly supplied by imported coal.

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1/ Semi-coke is no longer produced.

So far as production capacity is concerned, these new batteries will be in a position to replace the old coke ovens, which will have to close down<sup>1</sup> on account of their obsolescence. The iron and steel firms try to ensure their supplies by signing long-term contracts.

#### 9. Trend of prices for solid mineral fuels during 1971

The rise of world energy prices which had been going on since 1969 gradually levelled off in 1971 and, towards the end of the year, there was even a definite downward trend in the prices of certain energy products.

The prices of French coals rose by varying amounts according to the consumption sector in which they were used.

The price of industrial coal was raised on 1 February. The increase varied between 3 and 20 per cent for hard coal, depending on the quality and the coal-field of origin, and between 10 and 15 per cent for coke.

The table below shows the price trends for certain typical categories compared with prices of fuel-oil No. 2. 1/

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1/ Coal prices are shown free of tax (which is deductible).

Fuel-oil prices shown for the period 1960-1969 (inclusive) include tax, but are shown free of tax from 1970, VAT being deductible as for coal (the deduction starting from 1 June 1970).

It should, however, be noted that these fuel-oil prices are minimum prices which, up to 1970, could be as much as 20 per cent less than the list price. At the beginning of 1971, fuel-oil prices rose sharply as a result of the Teheran Agreement of 14 February and the Tripoli Agreement of 2 April; but, with the beginning of the second half-year, there was a reversal of the rising trend, and price reductions reappeared.

	1960 December	1965 December	1969 December	1970 December	1971 December
<b>Washed medium-volatile fines</b>					
<u>Bassin du Nord and Pas de Calais</u> collieries	in F/t 68	72	71	113.25	116.50
(LCV 7,090)	in F/kilothermie	9.59	10.15	10.01	15.97
<b>Washed high-volatile fines</b>					
<u>Bassin de Lorraine</u> collieries	in F/t 61	64	64	82	92
(LCV 6,450)	in F/kilothermie	9.46	9.92	9.92	12.71
Fuel-oil No. 2 (list price ex-Atlantic refinery)	in F/t 116.60	101.50	102.40(1), 109.44	134.27	
(LCV 2,700)	in F/kilothermie	12.02	10.46	10.55	11.28
13.84					

(1) Corrected figure.

The price of household coal had risen by 9 per cent by the beginning of the second quarter.

At the beginning of 1971, French metallurgical coal and coke prices for the iron and steel industry were brought into line with world prices. This resulted in a series of increases related to exchange-rate fluctuations. Thus, for example, the price of blast-furnace coke ex-Lorraine rose from F 193 to F 212 in December 1971.

Prices billed to EDF were also settled with reference to the prices charged for competing fuels.

#### 10. Long- and medium-term programme - prospects

The May 1971 report summarized the conclusions of the review of coal policy which was carried out in April and May 1971 and the measures taken to facilitate the transfer of mineworkers to other work.

Although the numbers employed, the output per manshift and the number of days worked have not undergone the same changes as were originally forecast, the present prospects are still for an output of the order of 25 million tons for all coal-fields in 1975.

G. HUNGARY

1. Introduction

Production, imports and exports of energy are set out in table 1. In 1971, imports of energy increased in comparison with 1970 and domestic production decreased by about 5 per cent.

The share of solid fuel declined from 49.9 per cent to 47.4 per cent as a result of reduced domestic production.

2. Demand

As part of the process of decline in the use of solid fuels, there were changes between 1970 and 1971 in the quantities consumed by the main users.

Main users of solid fuels

	<u>1970</u>	<u>1971</u>
Hungarian power stations	47.1%	51.7%
TÜZÉP Association (household coal)	18.9%	17.0%
State Railways	4.7%	4.5%

Although the consumption of coal by the electric power industry registered an increase, mainly as a result of the output from new open-cast brown-coal mines, the consumption of coal by small users declined as a result of a mild winter and the growth of gas and oil-heating. Consumption by the State Railways declined due to electrification and the wider use of diesel locomotives.

The cost of energy sources can be broken down as follows:

Domestic coal (average value)	100%
Domestic natural gas	35%
Domestic petroleum	52%
Imported petroleum	66%
Imported natural gas	70-80%

These figures show that the pattern of energy consumption in Hungary is being changed in accordance with the principles of a planned economy and of profitability.

The known coal reserves are of fairly poor quality, and the geological conditions are generally complex and unfavourable to mining. The Government subsidizes coal-mining according to the demand.

### 3. Supply

Table 1 gives a breakdown of production. Brown-coal production now accounts for 69.7 per cent of the total; hard-coal production is tending to decline. Brown coal of lesser calorific value (1,520 kcal/kg) will, however, still play an important part in the future.

Increased production of coking coal is unlikely. To increase the range of household coal, there are fairly heavy imports of ovoids. Domestic production of ovoids declined in 1971 from 1,463,000 tons to 1,308,000 tons.

There were 79 active mining enterprises in 1971, including four open-cast mines and one specialized in the processing of waste. Unprofitable mines were closed and output per mine increased.

There were 95,188 workers in the coal industry in 1971, or 3,644 less than in 1970. Significantly, few young people are seeking employment in the industry.

As a result of technological developments, productivity has improved.

	<u>1970</u>	<u>1971</u>
Output at the face (with auxiliary personnel) (tons/manshift)	5,759	5,995
At faces with powered supports (tons/manshift)	8,575	9,177
Productive output (tons/manshift)	5,025	5,219
Output underground (tons/manshift)	2,186	2,240
Total output (tons/manshift)	1,448	1,461

Production costs are tending to decline, and fell from 249.12 to 248.41 forints/t, but the average price showed an even larger decline, from 275.04 to 265.21 forints/t.

### 4. International trade

Hungary's role in the international trade is primarily that of a buyer. The pattern can be seen in the table. It is already possible to forecast that imports will double by 1980, while domestic production will remain static. This will be in accordance with the changes in the energy pattern.

### 5. Future trends in the demand for and supply of coal

Open-cast mining of brown coal is increasing while underground production will be further reduced. By opening some new mines, domestic demand can be met.

Table  
Production, imports and exports of energy

		1960	1970	1971	1975	1980
PRODUCTION	Energy	Tcal	Tcal	Tcal	forecast	forecast
					Tcal	Tcal
	Coking coal	5.5	7.4	7.0		
	Hard coal	7.8	10.3	9.0		
	Brown coal	66.6	64.8	60.5		
	Lignite	8.5	9.1	10.2		
	Total coal	88.4	91.0	86.7	80.0	68.0
	Petroleum	12.2	18.9	19.2	19.6	14.4
	Natural gas	2.8	29.5	31.4	45.1	51.5
	Others (hot springs, etc.)	12.2	5.0	5.6	4.0	3.2
	Total	115.6	144.4	142.9	148.7	137.1
IMPORTS	Coal	9.1	13.1	12.8	10.5	10.5
	Ovoids	1.9	2.1	2.4	2.3	2.3
	Coke	7.3	8.1	8.8	8.9	10.1
	Petroleum	13.9	48.8	51.6	75.7	117.6
	Natural gas	1.5	1.7	1.7	10.0	26.0
	Electricity	2.2	10.8	13.4	12.6	19.5
	Others	2.0	0.6	0.1	0.1	0.1
	Total	37.9	85.2	90.8	120.1	186.6
	Available energy	153.5	229.6	233.7	268.8	323.8
	Exports and reserves		13.0		12.4	9.4
	Total consumption		216.6		256.4	314.4

## H. NETHERLANDS

The gradual closure of mines has proceeded as planned, so that production amounted to 3.79 million tons (- 34 per cent compared with 1969), made up of 2.5 million tons of industrial coal and 1.29 million tons of graded household coal. Pithead stocks at the end of 1971 totalled 560,000 tons (as against 227,000 at the end of 1970), including 141,000 tons of graded domestic coal (as against 5,000 tons).

The following reductions in consumption were recorded in the various consumption sectors:

	(million tons)		
	<u>1969</u>	<u>1970</u>	<u>1971</u>
Patent fuel plants	1,040	875	575
Public power stations	3,195	1,775	1,040
Coke ovens in the iron and steel industry	2,600	2,600	2,300
Other industries	520	355	200
Households	1,550	1,225	565

The inroads made by natural gas, and a higher than normal seasonal temperature explain the decreases under patent fuel plants and households.

Trends in the public power stations sector were as follows:

(thousand tons)

	1969	1970	1971	1971 compared with 1970
Coal	3,140	1,760	1,005	- 43%
Fuel oil	4,225	4,005	3,555	- 11%
Blast-furnace gas	375	430	440	+ 2%
Natural gas	2,730	5,260	7,470	+ 42%
Nuclear power	110	140	155	+ 11%
Total	10,580	11,595	12,625	+ 9%

Coal imports fell by 1.9 million tons due to a reduction of 700,000 tons in imports from ECSC and a drop of 1.2 million tons in imports from non-member countries.

I. POLAND

1. Demand

The volume of domestic and export demand for fuel and energy in 1971 was as follows:

(a) Hard coal and hard-coal briquettes

In 1971 the domestic demand for hard coal and hard-coal briquettes was: 116.2 million tons

The demand for export was: 30.5 million tons

Domestic consumption of hard coal was as follows:

(i) Industry (production purposes) 85.1 million tons

This is 3.0 per cent higher than the 1970 figure of 82.6 million tons.

(ii) Ministry of Communications

In 1971 consumption of hard coal and hard-coal briquettes amounted to: 7.3 million tons

This is 0.7 million tons less than the 1970 figure, as a result of the growth of electric and diesel-powered services and also owing to favourable weather conditions in the fourth quarter of 1971.

(iii) Households

In 1971 deliveries of hard coal and hard-coal briquettes to this sector amounted to: 23.8 million tons

This is 0.5 million tons more than deliveries in 1970.

(iv) Exports

In 1971 deliveries of hard coal for export amounted to: 30.5 million tons

This is 1.7 million tons higher than the 1970 export figure.

(v) Hard-coal stocks

Industrial hard-coal stocks amounted on 31 December 1971 to: 6.2 million tons

This is 8.7 per cent, or 0.5 million tons, more than at the end of 1970.

At the end of 1971, coal stocks held by the Ministry of Transport amounted to: 0.5 million tons

(b) Brown coal and brown-coal briquettes

In 1970 output of brown coal amounted to: 34.5 million tons

This is 5.1 per cent, or 1.7 million tons, more than in 1970.

(a) Consumption of brown coal and brown-coal briquettes for production purposes amounted to:

- brown coal 30.1 million tons  
- brown-coal briquettes 0.06 million tons

(b) Deliveries of brown coal for export amounted to: 3.6 million tons

(c) Coke

In 1971, coke production amounted to: 17.1 million tons

of which, 90.6 per cent was produced in coke-chemical plants.

As compared with 1970, the output of coke increased by 1.8 per cent.

Deliveries of coke for internal consumption amounted to: 15.4 million tons

2. Supply

(a) In 1971, output of hard coal amounted to: 145.5 million tons

Output of hard-coal briquettes amounted to: 1.6 million tons

Output of hard coal was 3.8 per cent, or 5.4 million tons, higher than in 1970.

(b) In 1971 the number of workers employed in hard-coal mines was: 210,500

(c) In 1971, underground productivity was: 2,652 kg

This is 3.7 per cent, or 97 kg, higher than productivity in 1970.

- (d) In 1971 coal output per man-day was: 2,012 kg  
This is 3.9 per cent higher than the 1970 figure of 1,935 kg.
- (e) On 31 December 1971 pithead stocks amounted to: 842,000 tons

### 3. Trends in international trade in solid fuels

In 1971 internal prices of hard coal and other sources of energy did not change.

### 4. Long-term trends in the demand for, and supply of, coal

In Poland hard and brown coal are the main sources of energy.

For 1972, the anticipated hard-coal output figure is 150.4 million tons - 5.1 million tons, or 3.3 per cent, more than in 1971.

Brown-coal output is expected to be about 35.9 million tons.

The increase in the output of hard and brown coal during 1972 will fully satisfy Poland's energy requirements.

In 1975 the output of hard coal is expected to be 157.2 million tons, and of brown coal 36.5 million tons.

J. ROMANIA

In 1971, the first year of the current five-year plan, industrial production increased by 11.5 per cent over the 1970 figure, outstripping the planned growth rate by 1 per cent.

Electric power production was 39,400 million kWh; this output, which was 12.3 per cent greater than that of the previous year, provided a sufficient supply both for industry and for the rest of the economy.

In 1971, petroleum production rose by 3.1 per cent and natural gas production by 8.3 per cent.

Coal production amounted to 30.6 million tons, or about the same as in 1970. Hard-coal output was 6.792 million tons, or 6.1 per cent more than in 1970, while brown-coal output was 13.809 million tons - 2.3 per cent less.

The falling off in coal production in 1970 was due to the following reasons:

- (a) the fairly mild winter, which reduced household consumption to about half as much as in the previous year;
- (b) the fact that, since the new thermal-power-station production capacity did not enter into operation until the end of the year, it did not produce any increase in brown-coal consumption;
- (c) the development of traction by diesel and electric locomotives, which reduced coal consumption by the railways.

Coal deliveries to the different sectors in 1971 were as follows:

- Iron and steel industry: 2.039 million tons (+ 2.4 per cent over 1970);
- Thermal power stations: 14.539 million tons (+ 2.4 per cent over 1970);
- Transport: 1.412 million tons (- 15.3 per cent in relation to 1970);
- Households: 1.093 million tons (- 44.7 per cent in relation to 1970);
- Other industrial sectors: 1.518 million tons (- 22.9 per cent in relation to 1970).

Meanwhile, briquette consumption rose from 647,000 to 756,000 tons, the increase of 16.8 per cent resulting from the entry into operation of a new briquette plant.

The bulk of the brown-coal output went to the thermal power stations, brown-coal deliveries to other consumers being replaced as far as possible by other types of fuel.

The development of brown-coal production is mainly centred in the open-cast mines, especially in the Oltenia brown-coal basin. New open-cast mines to be brought into service in this basin in the future will operate in association with electric power stations built near them.

In most of the underground mines, coal output was stationary or in decline. Labour productivity underground was 2,125 tons per shift, which is 1 per cent higher than in 1970.

In 1972 total coal production is expected to increase by 20 per cent with brown-coal and hard-coal output being 26 and 8 per cent respectively greater than in 1971.

An increase of this magnitude in brown-coal production will provide the necessary fuel for the new thermal power stations to be brought into operation in 1972, as well as for a briquette plant, with an annual output of 440,000 tons, which is also to be put into operation in 1972. Hard-coal production will be expanded to cover coke and energy requirements.

Coal deliveries to the main sectors in 1972 are expected to increase as follows in relation to 1971:

- Electric power stations, by 22 per cent;
- New industrial plants, by 52 per cent;
- Households, by 70 per cent for coal and by about 50 per cent for briquettes.

In conclusion, coal production, which remained stationary in 1971, will increase again in 1972 to meet the needs of the thermal power stations and new plants put into operation at the end of 1971 and in 1972.

## K. UNITED KINGDOM

1. Output and productivity

At 44.5 million tons, total saleable output of coal in the first 24 weeks of 1972 was over 26 million tons less than in the corresponding period of 1971; this reduction in output is almost entirely attributable to the effects of the miners' strike. Output for the year 1972 is now estimated at about 115 million tons, or nearly 30 million tons less than in 1971.

At 40.8 cwt 1/ per manshift, average productivity in the 24-week period is 4.6 cwt lower than in 1971, but it is now a little over 2 per cent above the rate for the corresponding period of 1971.

2. Manpower

Total manpower on 10 June was 271,000, some 6,000 fewer than at the beginning of the year. Since the end of the miners' strike, there has been a reduction in absenteeism caused by the improvement in the industrial climate; the average weekly absenteeism has been about 2 per cent lower than in the corresponding period of last year.

3. The United Kingdom energy market

The low level of energy demand in 1971 reflected the economic recession which persisted throughout the year. It was the first year that oil contributed a greater share than coal to the energy market. The net fall in energy consumption of 4.9 million tce conceals a much larger fall in the consumption of coal (16.1 million tce), offset mainly by the rise of 9.8 million tce in the consumption of natural gas. Consumption of oil increased by under 2 per cent during 1971, the lowest growth rate since the war. The reduced growth of sales, following a decade of growth rates of up to 10 per cent a year, was the result of the stagnant state of the economy and the decline in the use of oil as a feedstock to produce gas.

The United Kingdom energy consumption

Primary fuel	1970		1971*		Change 1970-1971
	million tce	% of total	million tce	% of total	
Coal	154.4	47.1	138.3	42.8	-16.1
Petroleum	145.6	44.4	147.5	45.6	+ 1.9
Natural gas	16.0	4.8	25.8	8.0	+ 9.8
Nuclear Power	9.4	2.9	9.7	3.0	+ 0.3
Hydro-electricity	2.6	0.8	1.8	0.6	- 0.8
Total	328.0	100.0	323.1	100.0	- 4.9

\*Provisional

1/ One cwt = 50.802 kg.

Industrial production in January and February, well below the level reached in the second half of 1971, was particularly affected by the energy crisis. Much of the production loss caused by the coal strike and its effects is currently being made up, and this should lead to a marked increase in energy demand. Given an early economic improvement, inland energy consumption could reach an annual rate of 330 million tce towards the end of the year (consumption in 1971 was 323 million tce and in 1970 328 million tce). The nuclear power station at Wylfa was commissioned towards the end of 1971, but its full effect will not be felt until later this year.

#### 4. The over-all market for coal

The figures for the first 24 weeks of 1972 are not representative because of the miners' dispute. Inland coal consumption at 53.4 million tons was 16.2 million tons (23 per cent) down on the same period last year. Consumption was affected by the inability to move supplies throughout the strike period, by customers' attempts to conserve power, by government restrictions on industrial output, by the "rationing" of electricity supplies and, since the end of the strike, by consumers' attempts to conserve stocks in anticipation of a rail strike. In the post-strike period, the recovery in colliery output has been faster than expected and has contributed to the rapid build-up of distributed stocks, which stood at 18.0 million tons on 10 June 1972.

It is still too early to assess accurately the effect on customers of the interruption in supplies occasioned by the strike - and of the consequent 7.5 per cent increase in prices. Provisional estimates of disposals in 1972 by market categories, in line with the 1972/1973 disposal estimates, are set out in table a with comparable figures for 1970 and 1971, but industrial activity could be seriously affected if the current dock dispute resulted in a strike. Table b contains detailed statistics of production, consumption and stocks for the calendar years 1970 and 1971, and table c contains similar statistics for the first 24 weeks of 1972.

#### 5. Coal consumption by main markets

##### (a) Electricity

The rate of growth in electricity sent out in 1971 by the three British generating authorities was 3.7 per cent. This compares with a Central Electricity Generating Board (CEGB) estimate of 6 per cent rate of growth in electricity sales for the period including 1971/1972. The Scottish generating authorities had given slightly higher growth estimates. This shortfall is a result of both the mild weather and the economic recession.

In 1970 and 1971 fuelling of CEGB power stations was as follows:

Fuel	1971	1970	% change	million tce
Coal	65,397	69,408	- 5.8	
Petroleum	19,670	16,821	+ 16.9	
Nuclear	7,151	6,793	+ 5.3	
Natural gas	717	147	+388.0	
Total	92,935	93,169	- 0.2	

During 1971, improved efficiency enabled CEGB power stations to send out 3.9 per cent more electricity, with a reduction in fuel burn of 0.2 per cent.

Coal consumption at 65.4 million tons would have been higher but for the effects of the overtime ban in the coal industry, which caused CEGB to conserve coal stocks and increase the burn of rival fuels.

The increase in oil consumption reflects the commissioning of new oil-fired plants and, to a smaller degree, the effects of conversion.

At 29.8 million tons in the first 24 weeks of 1972, coal consumption at power stations was some 5.6 million tons lower than the comparable figure for 1971. By the end of the strike, coal stocks at power stations had been reduced to 5.4 million tons but, as a result of concentration of supplies to CEGB in the immediate post-strike period and of the continued use of oil burn to conserve coal, power station stocks at 10 June stood at 14 million tons, 0.5 million tons higher than a year earlier. Agreement has been reached with CEGB regarding excess stocking arrangements for the summer and CEGB is planning to end the summer with some 18 million tons in stock, about 6 million tons above the normal level for the time of year. Deliveries on this basis are now being made to CEGB.

Coaling for the new coal-fired Drax station has started and this should help to increase the level of disposals to CEGB during 1972; stocks at the stations could be built up to some 0.5 million tons. There are no details as yet of the date when the generating sets will start operating.

In the absence of any government action to promote further coal burn in 1972, oil consumption is expected to increase and coal consumption to decrease, partly as a result of the commissioning of oil stations at Fawley, Kingsnorth and Pembroke, and of conversion to oil approved for stations at Northfleet, Portishead 'B' and Portsmouth, and partly through the displacement of coal-fired stations in the merit order due to the coal price increase.

Coal burn at Scottish power stations is not expected to increase substantially in 1972. An increase in oil and nuclear consumption is not likely, as the existing capacity is limited. Coal stocks are high at Scottish power stations; the level of stocking is equivalent to the amount normally held at the end of the summer.

#### (b) Coke ovens

The recession in the United Kingdom steel industry, which became evident in the latter half of 1970, continued throughout the whole of 1971, taking a parallel course to the general recession in the steel industry throughout the world. Consumer demand for steel fell away and steel stock-holders also ran down their stocks. As reordering declined, the British Steel Corporation (BSC) was forced to reduce steel production which, in the second half of 1971, recorded its lowest level for many years.

Associated with the lower level of steel production was a sharp reduction in the tonnage of coking coal consumed at coke ovens in the production of blast-furnace coke. In 1971, coal consumption at coke ovens totalled 23.2 million tons, 1.7 million tons less than in 1970. Coal stocks at coke ovens at the end of the year stood at 1.8 million tons, an increase of 0.3 million tons over 1970.

Coal consumption at coke ovens during the first 24 weeks of 1972 was 7.9 million tons, a drop of 3.3 million tons on the corresponding period of 1971. The reduced consumption is the result of the cessation of supplies during the strike period and a cut-back in throughput by BSC.

Steel output in April 1972 was well in excess of 500,000 tons per week; this was the best rate of output for more than a year and suggested that some sectors of the industry, particularly the Corporation's strip mills division, were working at near peak levels. Although the May steel production figures were less satisfactory than those for April, they show a 25 per cent increase over the May 1971 figures and suggest that the slow revival in the steel industry is continuing.

In the first four months of 1972, BSC imported almost 0.6 million tons of coking coal and its plans for 1972/1973 are to import up to 1.25 million tons, the bulk of which is expected to come in during the calendar year 1972.

(c) The industrial market

Coal consumption in the industrial sector in 1971 at 15.6 million tons was 3.7 million tons lower than in 1970, due to the low level of economic activity which prevailed throughout the year and losses to rival fuels. Competition from both gas and oil intensified.

In the first 24 weeks of 1972, industrial consumption at 5.4 million tons was 2.6 million tons down on the same period of the preceding year, largely due to shortfalls during the strike period, when supplies to the industrial market ceased (apart from hospitals and other essential services accorded priority by the Department of Trade and Industry). By the beginning of April, however, the flow of supplies to the general industrial market had been largely reinstated. Industrial consumption, particularly in the South-East, was hit again in April by the work-to-rule on the railways. Despite these setbacks, however, there is evidence of recovery in the industrial market as consumers replenish stocks depleted by the strike. At one million tons (3.9 weeks), stocks held by industrial consumers in the week ending 10 June 1972 show a marked improvement over the situation at the end of the strike when stocks amounted to only 472,000 tons (1.7 weeks).

Competition from oil and gas in the industrial sector remains active. Since the latter part of 1971, oil competition has increased, as oil companies have found themselves with surplus capacity at a time of low-level activity in the economy as a whole, but prices are expected to increase over the next 12 to 18 months as the OPEC demands are stepped up. Gas prices have hardened considerably, but good contract cover is available at prices of around 3 pence a therm <sup>1/</sup> for interruptible supply, and coal is under pressure, particularly with local authorities and hospitals, to retain business. The National Coal Board, however, has met with considerable success in retaining its contracts for major industrial business.

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<sup>1/</sup> One therm = 100,000 BTU = 25,200 kcal.

Prospects for the industrial market for the rest of 1972 may show some improvement in disposals, as consumers continue to build stocks, and if the measures taken to stimulate the economy, take effect. Towards the end of the year, the Alcan Smelter in Northumberland will become operational, and will eventually provide a market for some 1 million tons of coal a year.

(d) The domestic market

At 16.9 million tons, coal consumption in the domestic market in 1971 was nearly 2 million tons lower than in the previous year.

After an encouraging start to the year, the introduction of winter prices on 1 October, coupled with a good summer of exceptional duration, had a depressing effect on demand. Sales showed no signs of recovery until early in December, when customers built up stocks in anticipation of the previously announced strike. At the end of the year, the level of house coal stocks, at 0.9 million tons, was only marginally lower than a year earlier.

In the first 24 weeks of 1972, coal consumption was 6.5 million tons, 2.5 million tons less than in the same period of the preceding year.

The prospects for the whole of 1972 are difficult to assess and will depend on the relative price per therm of competing fuels and customer preference. The availability of house coal and smokeless fuels should be sufficient to meet all demands.

Since the introduction of summer prices at the beginning of May, 1972, there has been a strong pressure on house coals and greater demand for smokeless fuels, as both the trade and the public replenish their stocks and take advantage of the reduced prices. On 20 June, stocks of house coal stood at 0.5 million tons, marginally above stocks held at the same time last year.

(e) Exports

At the end of 1970, the Government, expecting a shortage, decided to raise the ban on coal imports. Export shipments were restricted, and no fresh sales were made. In fact, by March or April 1971, after a fairly mild winter and the onset of the current industrial recession, markets had weakened materially and there was no longer any opportunity for additional trade. Prices and freights dropped severely and competition became keener. In the autumn, the overtime ban in the pits affected supplies, and again exports were limited.

Coal exports during 1971, at 2.6 million tons, were 0.5 million tons less than in the previous year.

1972 started with a seven-week complete stoppage in the pits, followed immediately by the Government embargo on exports, but shipments from the Immingham Terminal were resumed in mid-June and may reach 100,000 tons during the month.

Shipments in the first five months of 1972 were reduced to 380,000 tons compared with 1.17 million last year in the same period. It is estimated that shipments in 1972 will be about 2 million tons.

Table a

SUPPLY AND DISPOSALS

COMPARISON FOR CALENDAR YEARS 1970 AND 1971  
AND FORECASTS FOR 1972

	<u>million tons</u>		
	<u>1970</u>	<u>1971*</u>	<u>1972†</u>
<u>Supply</u>			
National Coal Board (NCB) deep-mined	133.3	134.3	115.0
Other coal marketed by NCB	9.0	10.4	
	<hr/>	<hr/>	
	142.3	144.7	
	<hr/>	<hr/>	
<u>Disposals</u>			
Gas	4.0	1.5	0.5
Electricity - CEBG	65.1	65.3	55.6
Scottish	6.4	6.2	6.0
Coke ovens	25.1	23.0	20.9
Industry and misc.	22.5	18.3	14.0
Household sector (bituminous)	14.8	12.4	9.5
Household sector (nat. smokeless)	1.9	1.7	1.5
Household sector (man. fuel plants)	4.4	4.6	4.3
Other inland	1.9	1.8	1.5
Miners' coal/colly. cons.	4.6	4.0	3.5
Exports	3.1	2.6	2.0
	<hr/>	<hr/>	
	153.8	141.4	119.3
	<hr/>	<hr/>	
<u>Difference</u>	- 11.5	+ 3.3	- 5.0
<u>Total opening stock</u>	18.5	7.0	10.3
<u>Total closing stock</u>	7.0	10.3	

\* Provisional

† Forecast

Note: The supply forecast for 1972 does not include imports or non-vested United Kingdom production.

Table b  
COAL STATISTICS  
52 WEEKS OF THE YEAR

	1971 million tons	1970 million tons	Difference	
			million tons	%
<u>Production</u>				
NCB deep-mined	134.31	134.53	-	0.22
Other coal	10.43	7.76	+	2.67
Total	144.74	142.29	+	2.45
Total disposals	141.39	153.73	-	12.34
<u>Consumption</u>				
Collieries	1.60	1.89	-	0.29
Power stations	71.65	76.02	-	4.37
Gas-works	1.83	4.21	-	2.38
Coke ovens	23.25	24.94	-	1.69
Other conversion industries	4.37	4.09	+	0.28
Industry	15.57	19.30	-	3.73
Transport	0.19	0.24	-	0.05
Households:				
House coal	15.45	17.88	-	2.43
Anthracite and dry steam coal	1.49	1.99	-	0.50
Other final consumption (partly estimated)	3.22	3.85	-	0.63
Total inland	138.62	154.41	-	15.79
Exports	2.62	3.14	-	0.52
Total inland and exports	141.24	157.55	-	16.31
Average temperature (30 year average = 9.6°C or 49.3°F)	9.9°C 49.8°F	9.7°C 49.5°F	+	0.2°C 0.3°F

	million tons			
	Stocks at 25 December		Changes in stocks over 52 weeks of year	
	1971	1970	1971	1970
Distributed	20.75	14.43	+	6.32
Undistributed	10.23	7.10	+	3.13
Total	30.98	21.53	+	9.45

Distributed stocks at 25 December 1971	1971	1970	Changes in stocks over 52 weeks of year	
			1971	1970
Power stations	15.71	9.58	+	6.13
Gas-works	0.07	0.28	-	0.21
Coke ovens	1.77	1.43	+	0.34
Industry	1.48	1.58	-	0.10
House coal	0.92	1.01	-	0.09
Anthracite	0.44	0.21	+	0.23
Other	0.36	0.34	+	0.02
Total	20.75	14.43	+	6.32

Table C  
COAL STATISTICS  
FIRST 24 WEEKS OF THE YEAR

	1972	1971	Difference	
	Million tons	Million tons	Million tons	%
<u>Production</u>				
NCB deep mined	39.79	66.86	- 27.07	- 40.5
Opencast	4.67	4.47	+ 0.20	+ 4.5
Total	44.46	71.33	- 26.87	- 37.7
<u>Consumption</u>				
Collieries	0.59	0.81	- 0.22	- 27.2
Power stations	29.78	35.38	- 5.60	- 15.8
Gas-works	0.26	1.23	- 0.97	- 78.9
Coke ovens	7.90	11.20	- 3.30	- 29.5
Other conversion industries	1.74	2.09	- 0.35	- 16.7
Industry	5.39	8.00	- 2.61	- 32.6
Transport	0.05	0.10	- 0.05	- 50.0
Households:				
House coal	5.64	8.19	- 2.55	- 31.1
Anthracite and dry steam coal	0.88	0.80	+ 0.08	+ 10.0
Other final consumption (partly estimated)	1.20	1.75	- 0.55	- 31.4
Total Inland	53.43	69.55	- 16.12	- 23.2
Exports	0.42	1.26	- 0.84	- 66.7
Total Inland and Exports	53.85	70.81	- 16.96	- 24.0
Average temperature (30-year average = 7.4°C or 45.3°F)	7.1°C 43.3°F	7.1°C 43.2°F	No change No change	

	Stocks at 10 June 1972			Million tons	
				Changes in stocks over first 24 weeks of year	
	1972	1971	Difference	1972	1971
Distributed	17.97	17.62	+ 0.35	- 1.86	+ 4.33
Undistributed	8.13	7.55	+ 0.58	- 2.10	+ 0.57
Total	26.10	25.17	+ 0.93	- 3.96	+ 4.90

Distributed stocks at 15 May 1972	1972	1971	Difference	Changes in stocks over first 24 weeks of year	
				1972	1971
Power stations	13.98	12.97	+ 1.01	- 2.03	+ 4.31
Gas works	0.04	0.08	- 0.04	- 0.02	- 0.18
Coke ovens	1.87	1.97	- 0.10	+ 0.26	+ 0.63
Industry	1.04	1.37	- 0.23	+ 0.41	- 0.09
House coal	0.53	0.63	- 0.10	- 0.57	+ 0.35
Anthracite	0.26	0.29	- 0.03	+ 0.16	+ 0.08
Other	0.22	0.30	- 0.08	- 0.13	- 0.03
Total	17.96	17.62	+ 0.38	- 0.86	+ 4.32

L. SWEDEN

1. The general economic situation

The level of activity of the Swedish economy was very low in 1971. According to preliminary figures, GNP rose by only 0.3 per cent. The domestic demand was about 2 per cent lower than in the previous year due to decreasing investments in building and construction as well as in stocks. Moreover, private consumption stagnated at the same level as in the previous year. Total fixed capital formation is estimated to have fallen by 2.5 per cent, investment in construction alone having dropped by 5-6 per cent. Investment in machinery and equipment on the other hand increased by 2 per cent. The volume of total exports rose by 3.5 per cent, while that of imports fell by 5 per cent.

Industrial production stagnated or declined in most sectors except engineering, shipbuilding and ore-mining. The increase in engineering output, however, was only 3 per cent, compared to 10 per cent in 1970. Due to slackening demand and the fall in investment in stocks, deliveries of engineering products to the home market declined, while exports increased by 12 per cent.

2. The development of the iron and steel industry

The slackening demand for iron ore led to a slowing down of mining activity in 1971. Production was the same as in 1969 but 5 per cent higher than in 1970, when the output was affected by a mine strike. Exports fell by 6 per cent and the stocks of iron ore increased considerably.

Owing to weak domestic and foreign markets, the Swedish production of crude steel decreased by 4 per cent in 1971. The output of stainless and other special steels fell by 10 per cent and that of ordinary steel by 2 per cent. The volume of steel exports stagnated at the same level as in 1970 and imports fell by 9 per cent. Apparent consumption of finished steel declined by 6 per cent, while actual consumption remained at the level of 1970 and 1971. After heavy stockbuilding in 1970 by producers as well as consumers, there was in 1971 a destocking of steel, especially by consumers. Preliminary figures indicate a total stock decrease in 1971 of about 65,000 tons.

Swedish steel prices for ordinary steel products, following the continental export prices, became stabilized in 1971 after the successive falls in the second half of 1970, but at a lower level than the 1970 average.

The order situation at the steelworks improved slightly towards the end of 1971, but orders on hand were 15 per cent lower than at the beginning of the year.

3. Essential features in the development of solid and liquid fuels in Sweden during 1971

Less coal and coke were consumed than in 1970. Coal consumption fell by about 5 per cent and that of coke by about 9 per cent. Consumption in 1971 was 1.5 million tons of coal and 1.9 million tons of coke.

The mild winter and the reduction in power production at oil-fired power plants due to more favourable conditions of hydro-power production, resulted in a decrease in deliveries of petroleum products in 1971 by approximately 6 per cent as compared to 1970. The decrease was mainly in fuel oil (about 12 per cent).

In 1971 the daily heating requirements were 2 per cent less than in a so-called normal year. As compared with 1970, when heating requirements exceeded those of a normal year by 12 per cent, the decrease was 12.5 per cent.

There are no official price quotations in Sweden. The c.i.f. price development indicates the trend in import prices. The market price is generally assumed to follow this development, though with a certain time lag.

According to official statistics, the c.i.f. prices were as shown in the table below (Swedish crowns).

	<u>Fourth quarter 1968</u>	<u>Fourth quarter 1969</u>	<u>Fourth quarter 1970</u>	<u>Fourth quarter 1971</u>
Coal total, SKr/ton	72	73	101	125
Coke " "	122	142	199	225
Gas-oil, diesel oil, SKr/m <sup>3</sup>	112	98	121	127
Fuel oil " "	64	60	86	82

Deliveries to consumers during 1971 are shown in the table below (thousand tons).

	<u>Coal</u> <sup>1/</sup>	<u>Coke</u> <sup>1/</sup>	<u>Gas-oil, diesel oil</u>	<u>Fuel oil</u>
Households	42	155	5,945	3,900
Industry	320	1,753	825	5,390
Power plants, etc.	5		50	2,750
Gas-works and coking plants	1,062			30
Other	32	18	2,337 <sup>3/</sup>	986 <sup>4/</sup>
<b>Total</b>	<b>1,461</b>	<b>1,926<sup>2/</sup></b>	<b>9,157</b>	<b>13,056</b>

In Sweden the supply situation for coal and coke was normal in 1971/72.

Coal consumption will decrease after 1 July 1972, when all the gas-works in the country have changed from coal to petroleum for the production of town gas.

1/ Actual consumption.

2/ Including 824 net production at Swedish gas-works and coking plants.

3/ Of which 1,566 for road transport and bunkering.

4/ Of which 761 for bunkering.

M. SWITZERLAND

1. Introduction

As to the share of the various fuels in total energy consumption in 1971, we refer to the letter addressed to the Energy Division on 3 May 1971 concerning the study, "The role of coal in ECE energy markets", of which we enclose a copy.

2. Demand

In 1971 demand was low in all sectors - industry, trades and households. The tendency to resort to other energy sources was somewhat strengthened during the past year.

As compared with the stocks available at the beginning of the year, a general decline of about 4 per cent was recorded at the end of 1971. Only the last gas-works still in production in Switzerland possessed larger stocks than at the beginning of the year. This situation is due to the fact that rather more coke had to be stocked in 1971. In so far as industry keeps stocks of coal, they should be regarded as substitutes for fuel oil.

3. Consumption

Effective consumption of solid fuels in 1971 has already been the subject of a detailed report to the Energy Division in connexion with the study mentioned above. We shall not therefore repeat the data in question.

4. Supplies

Since there are no coal-mines in Switzerland, we have omitted the questions in the first paragraph of this chapter.

It is difficult, on the other hand, to estimate the coke-producing capacity of gas-works in the near future. The reply to this question is closely linked with the problem of improving the long-distance supply of gas and the supply of natural gas.

No brown coal is mined in Switzerland.

5. International trade

Our relations with the producing and supplying countries hardly changed in 1971. For imports, we obviously tend to rely on the Federal Republic of Germany and France, which have always been among Switzerland's traditional suppliers. Other sources of supply, such as the Netherlands, are becoming less and less important owing to the closing down of the State coke ovens and the steady reduction of coal mining.

Coal prices remained comparatively stable throughout the past year. Only the price of coke - after the rise, due to demand, in 1970 - fell slightly. As compared with other energy sources, and particularly fuel oil, the price of coke remains, however, much too high.

This price structure may also be one of the main reasons for the decline in coke sales.

Data concerning imports in 1971 have already been supplied to you with the information provided each month by Switzerland.

6. Long-term trends of coal supply and demand

As detailed as possible an estimate of the prospects of the Swiss market in the near future was attempted in connexion with the study "The role of coal in ECE energy markets".

In this connexion it would be folly to engage in speculations or to nourish false hopes.

Unless some unusual event occurs, such as a persistent crisis, it is hardly to be expected that the trend observed over the past few years will be modified.

## N. CZECHOSLOVAKIA

1. Introduction

The main source of primary energy in Czechoslovakia is, and will continue to be, solid fuel, which, in tons of coal equivalent, accounted for 76 per cent of total consumption by industry and transport in 1971. The bulk of the brown coal is used for the production of electric power; hard coal is mainly used for the production of coke at iron and steel works and in mine coking plants, and to provide coke for metallurgical purposes.

In 1971 production and consumption of hard coal were approximately balanced. The relatively low stocks held by consumers at the beginning of 1971, and the increase in demand, made it possible to step up the production of solid fuel. The solid fuel requirements of industry, transport, building and agriculture and the increased demand of the communal-services sector could thus, in 1971, be fully satisfied.

At the same time success in increasing output made it possible to reconstitute adequate stocks of hard and brown coal by the end of 1971.

2. Demand

The total demand for solid fuel showed a rising trend in 1971, in particular the demand for brown coal for the production of electric power and of all other forms of solid fuel for the needs of the population and of the household and public services sector.

Changes in the consumption of solid fuel in the main sectors of the economy largely followed this trend; the table below shows 1971 consumption as a percentage of the 1970 figure: (1971/1970 index number)

	Hard coal	Brown coal	Coke
Industry	102.1	102.1	104.0
of which:			
Power stations	104.1	107.3	-
Coking plants	102.1	-	-
Briquetting plants	-	100.0	-
Steel works and engineering plants	101.9	98.6	104.3
Other	97.6	96.1	100.0
Transport	91.3	82.3	97.4
Retail trade and communal services	124.3	102.4	111.0
Other	94.2	83.1	82.8
Total	102.4	101.1	104.8

The consumption of brown and hard coal for the production of electric energy by thermal power stations of the Federal Ministry of Fuel and Energy increased in 1971 in line with the anticipated development of the energy sector in Czechoslovakia.

There was also an increase in the demand for hard coal for coking. Consumption of hard coal in the transport sector continued to fall in 1971, as a result of the modernization of rail transport and the gradual reduction of steam traction on the railways.

The increased consumption of solid fuel in the communal-services sector is due to the new requirements of the population.

### 3. Supply

Extraction and production (thousand tons)	1971	1970	1971, 1970 index number
Hard power-station coal	10,884	10,973	99.1
Hard coking coal	17,934	17,221	104.1
Total hard coal	28,813	28,194	102.2
Brown coal and briquettes	84,161	81,298	103.5
Briquettes	1,366	1,356	100.7
Brown-coal coke	911	1,408	64.7
Hard-coal coke	10,462	10,266	101.9

Output increased by 3.5 million tons as compared with 1970. The mean calorific value of hard coal fell by 30 kcal as compared with 1970, and that of brown coal by 13 kcal.

The number of workers in coal-mining enterprises rose by 0.3 per cent as compared with 1970.

Labour productivity, in tons per manshift, rose by 2.5 per cent as compared with 1970.

Since the size of the market was adequate, no special pricing measures were required to increase sales. On the contrary, the 4 per cent surcharge on fuel prices in industry for covering increased costs due to the introduction of additional extraction shifts and as an economic incentive to consumers to save fuel was maintained.

Pithead stocks consisted mainly of poorer grades of fuel. During the year, stocks changed in the following manner:

Hard-coal stocks increased by 113,000 tons.  
Brown-coal stocks fell by 26,000 tons.

These changes did not, however, affect the composition of supply and demand. The general trend in solid fuel supplies made it possible to raise production by 1.9 per cent over the figure originally envisaged.

#### 4. International trade

The marked revival in solid fuel sales - especially of hard coal - which took place in 1969-1970 was followed by a further decline. The main cause of this in 1971 was the slackening of activity in the steel industry throughout the world. Apart from that, the solid fuel market was affected by developments in the market for competing fuels: petroleum, fuel oil and natural gas. As far as Czechoslovakia's exports are concerned, these developments only affected coke.

The following quantitative changes in relation to the figures for 1970 took place in Czechoslovakia's foreign trade in solid fuels in 1971:

(1971/1970 index number)

	Total	Socialist countries	Capitalist countries
<b>(a) Exports</b>			
Hard coal	115.8	106.9	154.7
Brown coal	108.7	750.0	106.4
Coke	93.1	93.1	93.1
<b>(b) Imports</b>			
Hard coal, including briquettes	119.1	119.1	
Brown coal, including briquettes and lignite	73.0	73.0	

In 1971, the shares of hard and brown coal in solid fuel exports increased, while that of coke decreased, though to a lesser extent. The only imports of hard coal were of power-station coal, increased quantities of which were imported from Poland, while deliveries of hard coal from the USSR remained almost unchanged.

Czechoslovakia's commercial policy towards the eastern European countries as regards coking coal and coke is determined by the fact that Czechoslovakia is one of the countries which produce coking coal and metallurgical coke. The quantity of coke exported is stipulated in long-term agreements on the exchange of goods, and reflects the development of the iron and steel industry in those countries. The quantities and kinds to be delivered are specified in more detail in the annual protocols on the reciprocal exchange of goods.

Commercial relations with the western European countries are determined by Czechoslovakia's planned role in the international division of labour.

The main objective of Czechoslovakia's trade policy with regard to the export of solid fuels to western European countries is to ensure the long-term stability of exports on the basis of long-term contracts. This policy, however, is aimed at safeguarding not only the unilateral interests of Czechoslovakia's foreign trade, but also the interests of consumers in the long-term reliability of their supplies of solid fuels.

The table below compares prices of Czechoslovak exports of solid fuel to western European countries in 1971 with those of 1970:

	1971/1970 index number
Hard coking coal	134.7
Coke	140.9
Brown coal, including briquettes	97.4

Despite the fact that economic activity was already declining in 1971, the level attained by prices in 1971 was higher than that of 1970, since contracts had been signed during the boom period, at a time when the general situation suggested the possibility of a further rise in the price of solid fuels, and in particular of coking coal and coke. Although the prices of brown-coal fuels appear to show some decline, this is due to a different composition of the assortment exported, which included a larger proportion of coal dust.

##### 5. Long-term trends in supply and demand

In view of the existing geological reserves of brown coal and the fact that it can be mined by comparatively low-cost open-cast methods, it is thought that solid fuel, and especially brown coal, will remain a source of primary energy. In the future, the share of solid fuel is expected to decline, while that of liquid fuel will rise. Brown-coal output is expected to be about 5.4 per cent higher in 1975 than in 1971, while output of hard coal will have fallen by 4.2 per cent.

Solid fuel output in the next few years will be ensured by capital investment. Of the total capital investment in 1971, some 60 per cent was spent on hard-coal mines and 40 per cent on brown-coal undertakings.

Of decisive importance from the long-term viewpoint is the increase in the output of brown coal for electric power stations. Power-station demand for hard coal will decline, but, as against that, there will be a rise in the demand for coal suitable for coking.

It is also anticipated that an ever-increasing proportion of primary sources will be converted into nobler forms of fuel and energy.

## O. UNION OF SOVIET SOCIALIST REPUBLICS

Since the 1950's, production of the main types of primary fuel has expanded rapidly in the Soviet Union, and at the same time there have been changes in the structure of production. Petroleum and natural gas are occupying an increasingly important position in the over-all energy balance at the expense of coal, whose share declined from 66.1 per cent in 1950 to 36.8 per cent in 1970. The aggregate volume of coal production has, however, been increasing steadily. In 1971, 634.3 million tons of coal were mined in the Soviet Union, or 19 million more than in 1970. In that same year, about 172 million tons (27.1 per cent) came from open-cast mines.

The principal coal consumers in the future will be the same as they are today - the thermal power stations, the iron and steel industry and the communal-services sector. The three consumer groups together take as much as 80 per cent of all the coal mined.

The coal produced in the Soviet Union, whether for energy production or coking, displays a very wide range of quality and type which makes for flexible use.

For certain purposes, coal can successfully compete with other types of fuel.

In the case of blast furnaces, which take 26 per cent of the saleable output, coal has no economic competitor.

Coal is, moreover, the only fuel used to meet communal-services and agricultural requirements in rural areas, which amount to about 90 million tce.

The over-all volume of coal mined is therefore expected to increase steadily in view of the marked expansion of fuel consumption in the country, although the share of coal in total production of the main types of fuel will continue to decline. This is also why there are no difficulties in finding a market for coal in the Soviet Union.

Output from the coal-preparation plants is also increasing steadily in the Soviet Union. In 1971, these plants processed 235.9 million tons of coal, or 51 per cent of the total mined. The figure for the first half of 1972 was 122.5 million tons. The volume of coal prepared in a dense medium and by decantation is also steadily rising.

The directives issued by the Twenty-Fourth Congress of the Communist Party of the Soviet Union require coal production to reach 688 million tons by 1975 and labour productivity to increase by a factor of about 1.4 in relation to its 1970 level.

This growth rate for labour productivity is very important, because labour accounts for more than 50 per cent of the coal-mining industry's total costs.

Between 1966 and 1970, labour productivity in the collieries increased by 16.3 per cent. For underground mines, the increase was 13.9 per cent and for open-cast mines, 16.5 per cent. The average annual rate of increase for the branch as a whole was 3 per cent (underground mines, 2.6 per cent and open-cast mines, 3.1 per cent). The highest average annual growth rate was recorded in 1969/1970. In 1971, labour productivity rose by 6.5 per cent and, during the first half of 1972, by 6.3 per cent.

This sharp increase in the growth rate of labour productivity is the result of a reduction in underground labour costs through the mechanization of difficult, labour-intensive operations such as coal removal and the loading of the coal and dirt during drivage, and through the integrated mechanization and automation of production processes.

Between 1966 and 1970 technical advances led to an increase of 30.6 per cent in powered equipment, bringing the rate per worker up to 21,700 kWh in 1970.

The production targets set per mine and per working face have a big effect on the profitability of coal-mining.

In 1971, the average output per mine was 772,000 tons, i.e. 37.2 per cent more than in 1965.

Average face output was 240 t/d in 1971, and 735 t/d for a face with fully integrated mechanization; this represents an increase of 74 per cent over the 1965 level.

There are now 340 faces working to a flow chart based on a daily output of 1,000 tons or more of coal.

The flow charts for 16 working faces were established for the whole of 1972, and provide for an extraction rate of 500,000 tons or even more per face. During the first half of the year, 1,700 to 1,800 tons of coal were being produced daily from 37 faces. Forty to forty-five faces are expected to yield more than 500,000 tons each in 1972.

In the Soviet Union great importance is attached to the problem of reducing labour requirements for the different production operations that make up the whole technological process of coal-winning. Thanks to improvements in equipment and techniques, labour requirements for coal-getting dropped by 14.4 per cent between 1966 and 1970 in, among others, the following operations: coal-getting, 17.5 per cent; transport, 16.8 per cent; loading shifts, 18.6 per cent; and roof maintenance, 12.8 per cent.

The general development of powered equipment for coal mining has also made it possible to reduce labour requirements for coal winning, and 653 working areas have now been provided with such equipment.

Labour productivity largely depends on underground and pithead transport. In 1971, underground - and pithead - transport workers represented 11.3 per cent and more than 20 per cent of the total labour force respectively.

Between 1966 and 1970, underground-transport labour was reduced by 10 per cent and pithead-transport labour by 13.3 per cent.

The coal-mining industry in the Soviet Union is making steady progress. The total volume of coal production is increasing year by year, while production costs are declining and the yield is improving.

Forecasts indicate that coal production in the country as a whole will be 650 million tons in 1972.

Table A

Apparent total consumption of primary energy in the ECE region  
(million tons of coal equivalent)

Region	1969	1970	1971	<u>1970 / 1969 %</u>	<u>1971 / 1970 %</u>
Western Europe	1,260	1,364	1,412	+ 8.2	+ 5.6
of which:					
Main coal-producing countries	867	927	962	+ 6.9	+ 3.8
Northern Europe	105	118	114	+ 12.4	+ 3.4
Southern Europe	232	258	274	+ 11.2	+ 6.2
Other countries	56	61	62	+ 8.9	+ 1.6
Eastern Europe	428	454	468	+ 6.1	+ 3.1
Total, Europe	1,688	1,818	1,880	+ 7.7	+ 3.4
USSR	1,011	1,079	1,136	+ 6.7	+ 5.3
United States	2,189	2,282	2,390	+ 4.2	+ 4.7
ECE Region	4,888	5,179	5,406	+ 6.0	+ 4.4

Table B

Shares of solid fuels and their main competitors  
in the primary-energy market of the ECE region  
(excluding light petroleum products)

	Solid fuels			Black oils			Natural gas			Hydro and nuclear electricity		
	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971
Western Europe	44	40	36	45	47	49	7	9	11	4	4	4
Eastern Europe	81	80	79	7	8	8	11	12	12	0.3	0.4	0.4
Europe	54	51	48	35	37	38	8	9	11	3	3	3
USSR <sup>1/</sup>	47	45	44	32	34	35	20	20	20	1	1	1
United States	28	28	26	19	20	21	51	50	51	2	2	2

1/ Including light petroleum products.

Table C

Internal deliveries of hard coal to some main consuming  
sectors in Western and Eastern Europe

Total deliveries, and deliveries to some main sectors	1970	1971	1971 Distribution by main sectors	Change:	1971 1970
	Million tons	Million tons		Million tons	%
<u>Western Europe</u>	392.2	371.0	100	- 21.2	- 5.4
<u>of which:</u>					
Coke ovens	133.6	123.2	33	- 10.4	- 7.8
Thermal power stations	134.5	138.3	37	+ 3.8	+ 2.8
Industry	45.2	37.6	10	- 7.6	-16.8
Households	39.2	32.4	9	- 6.8	-17.4
<u>Eastern Europe</u>	169.1	173.2	100	+ 4.1	+ 2.4
<u>of which:</u>					
Coke ovens	41.3	42.7	25	+ 1.4	+ 3.4
Thermal power stations	39.9	41.2	24	+ 1.3	+ 3.3
Industry	44.6	46.7	27	+ 2.1	+ 4.7
Households	25.8	26.2	15	+ 0.4	+ 1.6

Table D  
Production of solid fuels in the ECE region

	1970 million tons	1971 million tons	Percentage change
<u>Hard coal</u>			
Western Europe	329.5	326.9	- 0.8
of which:			
major coal producers	312.2	309.2	- 1.0
others	17.3	17.7	+ 2.3
Eastern Europe	179.8	186.7	+ 3.8
Total Europe	509.3	513.6	+ 0.8
USSR	432.7	441.4	+ 2.0
United States	550.6	509.6*	- 7.4*
World	2,123		
<u>Brown coal</u>			
Western Europe	158.3	160.8	+ 1.6
of which:			
Federal Republic of Germany	107.8	104.5	- 3.1
Eastern Europe	441.3	445.4	+ 0.9
of which:			
German Democratic Republic	260.6	262.8	+ 0.8
Total Europe	599.6	606.2	+ 1.1
USSR	144.7	150.1	+ 3.7
United States	5.0*	6.4*	+28.0*
World	792		
<u>Coke-oven coke</u>			
Western Europe	99.9	94.2	- 5.7
Eastern Europe	29.5	29.7	+ 0.7
Total Europe	129.4	123.9	- 4.2
USSR	75.4	78.3	+ 3.8
United States	60.3	52.1	-13.6
World	343		

Table E

Rate of increase of output per man-year  
underground in the European hard-coal industry

1964	3.8
1965	3.2
1966	2.6
1967	7.8
1968	5.2
1969	4.8
1970	2.5
1971	2.2

Table F

Changes in output per manshift underground  
(hard-coal mining) in selected countries

(in percentages)

Country	1966 1965	1967 1966	1968 1967	1969 1968	1970 1969	1971 1970
Germany, Federal Republic of	+ 8.3	+ 11.4	+ 8.0	+ 3.9	+ 2.4	+ 1.9
Belgium	+ 6.0	+ 7.1	+ 6.2	+ 7.4	+ 8.4	+ 0.5
Spain	+ 3.1	+ 8.5	+ 6.5	+ 2.2	+ 0.9	- 5.5
France	+ 3.0	+ 6.7	+ 4.7	+ 7.4	+ 4.8	- 0.6
Hungary	+ 2.7	+ 8.7	+ 8.0	+ 3.5	- 0.6	- 2.3
Italy	- 7.7	+ 1.4	+ 0.1	- 7.7	+ 13.2	- 3.9
Netherlands	- 0.4	+ 5.6	+ 4.2	+ 14.1	+ 10.3	+ 2.4
Poland	+ 3.9	+ 6.8	+ 0.4	+ 3.2	+ 2.4	+ 5.8
Ukrainian SSR	..	+ 1.4	+ 2.8	+ 3.5	+ 2.1	..
Romania	+ 6.0 <sup>a/</sup>	+ 12.8 <sup>a/</sup>	..	+ 6.8	+ 3.1	..
United Kingdom	+ 2.2	+ 5.2	+ 9.7	+ 5.3	+ 2.7	- 0.4
Czechoslovakia	+10.6	+ 10.1	+ 14.6	+ 7.9	+ 5.1	+ 0.8
Turkey	+ 7.0	+ 5.4	- 0.4	- 1.8	- 3.7	- 16.7

<sup>a/</sup> Including brown-coal (underground): 1966/1965, + 9.6; 1967/1966, + 17.8

Table G

Underground employment in hard-coal mines  
(in thousands of men on the books, and percentage change)

Annual average

Country	End 1969	End 1970	End 1971	1971/1970 %
Germany, Federal Republic of	141	138	135	- 2
Belgium	34	29	27	- 7
Spain	36	33	32	- 3
France	74	66	60	- 9
Hungary	9	8	8	+ 0
Italy	1	1	1	+ 0
Ireland	1	1	1 <sup>a/</sup>	+ 0
Netherlands	10	7	6	-14
Poland	206	208	209	+ 0
Romania <sup>a/</sup>	12	13	16 <sup>a/</sup>	+23
United Kingdom	209	196	192	- 2
Czechoslovakia	49	48	47	- 2
Turkey	14	14	19	+36
Yugoslavia	2 <sup>a/</sup>	2 <sup>a/</sup>	2 <sup>a/</sup>	+ 0
Total Europe	798	764	755	- 1.2

<sup>a/</sup> Including brown-coal mines.

Table II

## URGENT TRADE IN HARD COAL AND PETROLEUM

(in million t and percentage change)

Exports from	EEC	United Kingdom	Western Europe	USSR	United States	Grand Total
Imports by	mill. t	mill. t	mill. t	mill. t	mill. t	mill. t
Total	16.4	-10.4	2.4	-11.1	18.8	-10.5
Other Western Europe	-21.4	0.2	-60.0	1.3	-31.6	8.3
Western Europe	17.5	-11.2	2.6	-18.8	20.1	-12.2
Western Europe	0.1	-66.7	-	0.1	-66.7	8.0
Total Europe	17.6	-12.0	2.6	-18.8	20.2	-12.9
Japan	-	-	-	-	-	1.1
USSR	-	-	-	-	8.4	8.4
Others	0.1	-66.7	0.1	± 0	0.2	-50.0
Bunkering						+71.4
Gr. n. total	17.7	-12.8	2.7	-18.2	20.4	-15.6
						+ 6.5
						- 11.6
						- 2.0
						- 5.0

Table I  
Coke in the ECE region  
(in million t and percentage)

Table J

## The Western and Eastern European hard-coal balances

Balance	WESTERN EUROPE			EASTERN EUROPE		
	Change		Present level	Change		Present level
	Per cent	Absolute		Per cent	Absolute	
1. Men on books (underground) in thousands	- 2.5	- 12	475	+ 1.1	+ 3	280
2. Output per man-year (underground), t	+ 1.7	+ 11.6	688.2	+ 2.7	+ 17.7	666.8
3. Production, million t	- 0.8	- 2.6	326.9	+ 3.8	+ 6.9	186.7
4. a/ Imports, million t (from outside the region)	- 8.9	- 3.8	38.7	+ 9.6	+ 1.3	14.8
5. a/ Exports, million t (to destinations outside the region)	- 57.1	- 0.4	0.3	+ 4.4	+ 1.1	26.2
6. Withdrawals from pithead stocks, million t	+ 21.3	+ 4.2	23.9	+ 44.8	+ 1.3	4.2
7. Gross inland availabilities, million t	- 0.5	- 1.8	389.2	+ 4.9	+ 8.4	179.5
8. Deliveries, million t, to:	- 5.4	- 21.2	371.0	+ 2.4	+ 4.1	173.2
(a) power stations	+ 2.8	+ 5.8	138.3	+ 3.3	+ 1.3	41.2
(b) coke ovens	- 7.8	- 10.4	123.2	+ 3.4	+ 1.4	42.7
(c) industry	- 16.8	- 7.6	37.6	+ 4.7	+ 2.1	46.7
(d) households, issues to miners, small consumers	- 17.4	- 6.8	32.4	+ 1.6	+ 0.4	26.2
(e) others b/	- 5.8	- 1.4	22.7	- 7.4	- 1	12.5
9. Producers' own consumption, changes of importers' stocks, unaccounted fuels (statistical differences) c/	+143.1	+ 20.6	35.0	+ 70.0	+ 4.2	10.2

a/ Including patent fuels.

b/ Includes patent-fuel and briquetting plants, gas-works, railways, inland water transport and various other consumers.

c/ Among the statistical differences are those resulting from the inclusion of patent fuels under items 4 and 5.

## STATISTICAL ANNEX

### Definitions and explanations

#### A. General remarks

In the following, some main definitions are given in order to clarify the statistical coverage of the tables. Details are to be found in the "Definitions and explanations" of the Annual Bulletin of Coal Statistics for Europe, Vol. III, New York 1969, if not otherwise stated.

Sources used are the Quarterly and Annual Bulletins of Coal Statistics for Europe and information made available by governments or contained in national statistical publications. In cases where these sources differed from each other, an attempt was made to maintain the series already established.

#### B. Apparent consumption

##### (a) Solid fuels

Net pithead production of hard coal and brown coal, plus or minus pithead stock changes, plus net trade (including trade in coke and other secondary products) and minus bunkers. Brown coal and its by-products have been converted to hard-coal equivalent of 7,000 kcal/kg on the basis of the following calorific equivalents:

-- Czechoslovakia; France:	0.5
- Austria; Bulgaria; Hungary; Italy; Portugal; Spain; USSR; Yugoslavia:	0.5
.. Other countries:	0.3

##### (b) Liquid fuels

Deliveries of refined products for internal consumption. Refineries' own consumption, synthetic fuels, lubricants, petroleum coke, bitumens and bunkers have not been included. "Black oils" means gas-oil, diesel oil and fuel oil. A coefficient of 1.43 has been used to convert tons of liquid fuel to coal equivalent. 1/

##### (c) Natural gas

Apparent consumption of natural gas corresponds to production, plus imports, minus exports, plus or minus changes in stocks, minus losses in transport and distribution. Production excludes useful liquid fractions and quantities of natural gas reinjected or used for drying. A coefficient of 142.857 or division by 7 has been used to convert Tcal of natural gas into kg of coal equivalent.

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1/ Source: Oil Statistics, Special Committee for Oil, OECD, Paris.

(a) Hydro-electricity

Apparent consumption of hydro-electricity corresponds to total net production of hydro-electric, nuclear and geothermal power plants. A coefficient of 0.125 has been used to convert GWh into kg of coal equivalent. 1/

C. Internal deliveries of hard coal

"Total internal deliveries" = gross inland availabilities, which means production, plus imports, minus exports, minus bunkers, minus withdrawals from stocks. "Thermal power stations" includes those at mines. "Industry" means industrial end-consumers - iron and steel industries, chemical industries, other industries and construction, but excludes the transport sector. The "household sector" includes issues to miners. Sectors not enumerated are patent-fuel plants, briquetting plants, gas-works, railways, inland waterways, miscellaneous own consumption and unaccounted fuel (statistical differences).

D. Distributed stocks

These include stocks at public utilities (gas-works, power stations), railways and - where applicable - at coke-ovens and patent-fuel plants. Stocks held by industrial undertakings are not included in the Belgian and Portuguese statistics. Merchants' stocks are not included in the statistics of Belgium, France, Germany, Federal Republic of, and the Netherlands.

E. Production

Hard-coal production is defined as net pithead production, i.e. it consists of gross production or coal raised to the surface, less the non-utilizable waste after screening and washing. Brown-coal production is gross production if expressed on a ton-for-ton basis.

F. Hard coal, brown coal, coke

Coal with a gross calorific value over 5,700 kcal/kg on a moist, ash-free basis is defined as hard coal, coal below that level, as well as lignite, pechkohle, dried brown coal and hard brown coal is defined as brown coal. "Coke" means "hard-coal coke" and includes coke-oven coke, gas coke, semi-coke and coke breeze. "Brown-coal coke" includes high-temperature brown-coal coke.

G. Productivity

The figures on output per manshift are calculated on an international basis; net pithead production on a ton-for-ton basis; "miners underground" includes apprentices but not foremen, capital-construction workers and contractors' men. No adjustments have been made to allow for differences in the length of shift from one country to another.

H. Trade

Trade figures exclude transit shipments. In principle, figures are exporters' figures, but in cases where these were not available, importers' figures were used. Exporters' and importers' figures hardly ever tally.

1/ Source: Annual Bulletin of Electric Energy Statistics for Europe, 1966, New York, 1967.

TABLE I  
APPARENT CONSUMPTION OF COMMERCIAL SOURCES OF PRIMARY ENERGY IN EUROPE, THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
(IN '000 t COAL EQUIVALENT)

Region and country	Total primary energy <sup>a/</sup>			of which												Total		
				Solid fuels			Black oil <sup>s</sup>			Natural gas			Hydro-electricity <sup>b/</sup>					
	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971
Centre and North-West of Europe																		
Major coal producers																		
Germany, Federal Republic of	295 112	314 700	319 000	134 860	134 034	127 731	101 932	115 002	118 713	14 261	20 114	26 642	2 371	2 894	2 411	253 424	272 044	275 497
Belgium	48 844	53 820	52 000	21 239	19 860	16 271	21 155	24 058	24 274	5 175	5 173	7 228	31	37	20	45 600	49 380	47 93
France	177 162	192 790	200 000	58 539	56 527	51 849	69 758	82 617	91 794	10 618	12 59	14 176	7 18	7 18	20	146 291	159 234	165 532
Netherlands	59 982	66 110	66 000	9 634	7 521	5 249	20 478	21 048	21 496	24 271	21 634	21 634	37	48	48	47 348	52 845	56 529
United Kingdom	286 009	299 360	305 000	161 311	155 008	147 573	70 512	79 688	81 719	8 474	16 15	26 039	3 768	3 550	3 550	244 065	254 427	258 677
Total	867 109	926 780	962 000	385 583	372 950	348 673	283 835	322 413	348 096	53 92	77 908	116 282	13 383	14 251	13 198	736 128	787 592	816 219
Others																		
Austria	22 081	25 260	25 000	6 352	6 841	5 793	7 905	8 743	9 701	3 173	3 857	4 487	2 000	2 65	2 347	19 520	22 396	22 377
Ireland	8 584	8 810	9 900	1 291	1 295	1 102	3 272	3 645	4 680	-	-	-	101	101	101	4 633	5 241	5 202
Luxembourg	5 364	5 570	5 300	3 492	3 584	3 331	1 589	1 674	1 620	4	18	24	184	1 9	1 9	5 189	5 385	5 101
Switzerland	19 837	21 120	22 000	767	702	506	11 284	12 527	13 242	-	17	71	3 516	3 686	3 686	15 569	16 912	17 505
Total	55 866	60 760	62 200	11 902	12 422	10 732	24 050	26 789	29 243	3 177	3 892	4 582	5 78	6 531	6 014*	44 917	49 434	50 571*
Northern Europe																		
Denmark	25 149	29 140	27 000	4 210	3 702	2 358	17 723	20 304	19 820	-	-	-	7	3	21 936	24 009	22 281	
Finland	16 815	19 490	19 000	3 104	3 961	3 571	10 841	11 832	12 089	-	-	-	1 023	1 19	1 309	14 964	16 982	16 969
Norway	17 062	18 670	19 000	1 328	1 222	1 168	6 665	7 222	6 931	-	-	-	7 146	7 217	7 217	15 083	15 692	15 812
Sweden	46 018	50 770	49 000	2 437	2 506	2 513	28 877	32 933	30 103	-	-	-	5 239	5 199	5 199	36 553	41 716	39 132
Total	105 044	118 070	114 000	11 079	11 491	9 610	64 106	72 291	68 943	-	-	-	13 364	13 529	15 541	88 551	97 311	94 194
Southern Europe																		
Spain	44 849	50 490	54 000	14 733	15 638	16 442	22 132	24 042	25 445	88	168	529	3 868	3 560	4 314	40 891	43 790	46 734
Greece	10 163	11 200	14 000	2 385	2 774	3 684	5 262	5 081	6 382	-	-	-	284	321	321	9 931	10 184	10 397
Italy	129 320	143 870	147 000	13 140	13 757	12 774	63 356	74 410	76 060	13 719	14 890	16 955	5 131	5 826	5 734	95 952	106 883	111 523
Portugal	5 768	6 620	6 800	1 067	984	738	2 122	2 581	2 870	-	-	-	714	756	756	4 792	4 792	4 765
Turkey	15 849	17 140	19 000	5 857	5 862	6 005	6 458	7 286	8 726	-	-	-	426	376	298	12 741	13 594	15 207
Yugoslavia	26 295	29 180	35 000	15 172	16 183	18 013	3 392	6 253	1 012	1 381	1 589	1 638	1 933	1 926	21 414	24 418	27 93	
Total	232 244	258 500	273 800	52 354	55 198	57 654	102 722	118 416	125 736	14 819	16 439	19 073	12 906	12 629	13 733	182 801	202 661	215 840
Total Western Europe	1 260 263	1 364 110	1 412 000	460 918	452 061	426 669	474 713	539 909	572 018	71 923	98 309	129 91	45 442	46 939	48 22*	1 152 996	1 137 218	1 176 824*
Eastern Europe																		
Bulgaria	29 448	34 130	34 000	18 971	20 132	19 784	5 200*	5 550*	5 900*	629*	529*	792*	273	269	269	25 134*	26 122*	26 392*
Hungary	29 905	32 450	33 000	18 062	19 382	18 982	4 297	4 705	4 849	3 896	4 123	4 271	12	11	11	26 267	27 191	28 474
Poland	151 514	138 100	143 000	115 467	119 620	122 509	2 900*	2 854	3 006	5 884	5 316	9 483	112	234	239	123 767*	131 24	124 845*
German Democratic Republic	96 875	101 910	102 000	86 766	88 543	87 750*	5 391*	6 526*	7 150*	246	606	1 346	204	193	91 627*	95 265*	96 538*	
Romania	52 180	56 880	60 000	11 671	13 110	14 378*	5 598*	6 076*	6 444*	31 954	32 149	34 202*	273	34 202	49 413*	49 413*	50 860*	54 895*
Czechoslovakia	88 241	91 290	96 000	74 285	75 916	78 852	5 577	6 492	7 749	2 160	2 971	310	456	333	89 332	88 524	86 905	
Total Eastern Europe	428 463	454 360	468 000	324 216	336 673	342 255*	28 363*	32 203*	35 208*	44 759*	48 505*	50 459*	1 145	1 521	1 521	398 483*	418 902*	431 430*
Total Europe	1 688 726	1 818 470	1 880 000	785 134	788 734	768 924*	503 076*	510 226*	516 682*	116 814*	146 814*	140 816*	36 887	48 460	49 460*	1 451 479*	1 586 120*	1 424 557*
USSR	1 010 603	1 079 170	1 136 000	479 744	484 487	501 072	305 ***	338 ***	375 ***	202 419	221 110	208 669	14 398*	15 547*	15 762*			
United States of America	2 189 298	2 282 320	2 390 000	461 848	484 864	458 377	305 554	338 498	375 000*	831 516	874 442	908 669	33 501	34 133	38 503	1 632 419	1 731 937	1 781 000*

a/ Including light petroleum products not shown in breakdown total.

b/ Including geothermal electricity amounting to:

and nuclear energy amounting to:

c/ Gross production.

TABLE 2  
PERCENTAGE CHANGE IN ENERGY CONSUMPTION AND CERTAIN ECONOMIC INDICATORS a/

COUNTRY	% change in production of pig-iron and blast-furnace ferro-alloys b/ (1)			% change in production of crude steel (ingots and steel for castings) b/ (1)			% change in the index of industrial production b/ b/ (2)			% change in gross national product at market prices b/ (4)			% change in apparent consumption of commercial sources of primary energy b/ (3)			% change in apparent consumption of solid fuels b/ (3)			
	1969 1968	1970 1969	1971 1970	1969 1968	1970 1969	1971 1970	1969 1968	1970 1969	1971 1970	1969 1968	1970 1969	1971 1970	1969 1968	1970 1969	1971 1970	1969 1968	1970 1969	1971 1970	
<u>Community</u>																			
Germany, Federal Republic of	11.4	-0.4	-10.8	10.1	-0.6	-10.5	12.5	6.9	2.0	8.0	5.5	2.8	9.4	6.6	1.4	10.2	-0.6	-4.7	
Belgium	9.1	-4.1	-4.1	10.9	-1.8	-1.3	10.9	5.3	0.7	6.7	6.1	4.2	0.8	10.2	-3.4	-6.5	-18.1		
France	10.7	5.5	-4.6	10.4	5.6	-3.8	13.6	7.0	5.3	7.7	6.0	5.3	8.0	3.7	-0.9	-3.4	-6.3		
Italy	-0.6	7.2	2.4	-3.2	5.2	1.0	2.9	7.1	-2.7	5.7	4.9	1.4	10.7	11.2	-0.2	4.7	-7.2		
Luxembourg	12.9	-1.1	-4.6	14.2	-1.1	-4.0	13.3	10	-0.8	15.8 <sup>e/</sup>	11.8 <sup>e/</sup>	10.5 <sup>e/</sup>	8.1	3.8	-4.8	6.4	2.6	-7.1	
Netherlands	22.7	1.0	7.6	27.2	6.7	1.0	11.9	10.0	6.8	5.7	6.0	4.0	14.3	10.2	30.1	-11.4	-21.9	-30.2	
Total Community	10.1	1.2	-5.9	8.8	1.7	-5.3	10.8	6.2	2.1	8.1	6.7*	4.7*	9.0	8.5	4.2	4.4	-2.3	-7.7	
<u>EFTA</u>																			
Austria	13.8	5.3	-3.8	13.2	3.9	2.9	11.0	8.5	5.9	6.1	7.8	5.2	5.3	14.4	-1.0	-3.7	7.7	-15.3	
Denmark	11.3	3.9	6.0	5.5	-1.9	-2.4	**	**	**	8.6	3.0	3.6	10.1	15.9	-7.3	-12.0	-2.1	-36.3	
Norway	0.6	-0.9	-7.5	3.6	1.9	-0.8	4.6	5.1	3.4	4.4	3.5	5.0	9.4	44.5	1.8	-8.0	-4.4		
Portugal	20.1	-9.0	14.9	27.8	-3.8	7.0	10.1	5.5	-2.3*	7.6 <sup>e/</sup>	11.8 <sup>e/</sup>	9.5 <sup>e/</sup>	12.6	14.8	2.7	6.7	-7.8	-25.0	
United Kingdom	-0.2	6.1	-12.8	2.2	5.5	-14.6	2.5	0.8	1.6	1.7	2.1	1.3	3.2	4.7	1.9	-1.1	-3.9	-4.8	
Sweden	+0	4.4	-1.3	4.5	3.3	-4.4	7.4	7.6	3.2	5.1	4.9	0.3	8.4	10.3	-3.5	-9.7	6.1	-2.8	
Switzerland	13.6	12.0	14.3	10.4	4.8	1.5	9.1	8.3	2.1	4.6	4.3	6.5	4.2	-16.7	-8.5	-27.9	-2.5		
Total EFTA	1.7	5.4	-9.8	3.9	4.7	-11.2	7.5	6.1	2.3*	5.6	5.3	4.1*	4.6	6.9	0.6	-1.4	-3.6	-6.1	
<u>Other Western Europe</u>																			
Spain	19.9	24.9	-0.5	15.9	20.8	24.9	4.9	13.8	7.9	5.4	11.0 <sup>e/</sup>	12.1 <sup>e/</sup>	10.0 <sup>e/</sup>	4.2	12.6	7.0	-1.2	6.1	5.1
Finland	11.7 <sup>d/</sup>	-0.5 <sup>d/</sup>	-15.4 <sup>d/</sup>	34.2	19.5	-12.3	13.6	10.0	-0.6	10.4	7.8	1.4	7.4	15.9	-2.5	16.0	28.2	-10.3	
Greece	-	-	-	+0	+0	+0	12.0	10.2	13.8	11.0 <sup>e/</sup>	10.0 <sup>e/</sup>	9.4 <sup>e/</sup>	13.4	12.2	25.0	22.7	16.3	32.8	
Ireland	-	-	-	+0	+0	+0	6.5	2.0	6.0	4.6	1.6	3.1	2.9	2.6	-7.5	0.3	-14.9		
Turkey	9.3	15.6*	10.6*	9.2	17.8*	4.0*	***	***	***	11.6 <sup>e/</sup>	13.9 <sup>e/</sup>	9.2 <sup>e/</sup>	4.8	8.2	10.8	5.8	0.1	2.4	
Yugoslavia	-0.2	6.4	18.8	11.2	0.4	10.1	10.6	9.1	10.7	17.9 <sup>e/</sup>	18.9 <sup>e/</sup>	13.0 <sup>e/</sup>	4.5	11.0	13.1	-1.8	6.7	11.3	
Total	13.0	15.6*	10.7*	18.4	17.9*	4.0*	11.4	7.9	7.2	11.2	10.7	7.7*	5.4	11.2	9.2	1.5	7.5	6.7	
Total Western Europe	8.4	2.9*	-5.6*	8.1	3.5*	-6.1*	9.9	6.7	3.9*	8.3	7.6*	5.5*	7.1	8.2	3.5	1.8	-1.9	-5.6	
<u>Eastern Europe</u>																			
Bulgaria	1.2 <sup>e/</sup>	9.6 <sup>e/</sup>	11.1 <sup>e/</sup>	3.7	18.8	8.2	9.9	9.6	9.2	9.9	7.2	7.0	6.1	15.3	-0.4	4.1	6.1	-1.7	
Hungary	6.3	4.3	9.2	4.4	2.6	1.0	2.3	6.7	4.9	8.4	4.9	7.5	3.2	8.9	1.7	-3.0	7.1	-1.9	
Poland	2.8	3.7	2.9	2.2	4.4	4.4	8.1 <sup>f/</sup>	8.0	9.2	8.4	2.1	5.2	7.1	6.4	5.0	3.6	5.2	2.4	
German Democratic Republic	-10.1	-4.9	+1.6	6.5 <sup>f/</sup>	-1.7 <sup>f/</sup>	5.9 <sup>f/</sup>	7.5	6.2	5.2	5.2	4.5	5.2	4.5	4.8	0.5	3.7	3.2	-0.9	
Romania	16.0	20.6	4.1	28.2	17.6	4.4	10.4	13.9	7.0*	7.9	6.6	12.5	11.7	8.2	5.5	12.4	10.3	9.7	
Czechoslovakia	1.3	7.7	5.5	2.3	6.3	5.1	5.9	6.4	7.3	5.8	4.6	6.4	3.5	5.2	4.2	2.2	3.9	3.9	
Total Eastern Europe	2.9	7.2	4.6	6.3*	6.5*	5.7	7.6	9.4	7.0*	6.9	5.8	7.3	6.5	6.1	3.0	4.1	3.8	1.7	
Total Europe	7.4	3.6*	-3.8*	7.8*	4.1*	-3.8*	9.3	7.4	4.8*	7.6	6.7*	6.4*	7.0	7.7	3.4	2.8	0.1	-2.5	
USSR	3.6	5.3	3.9	3.6	5.0	4.1	7.3	8.0	8.0	4.8	9.0	6.0*	4.7	6.8	5.3	2.7	1.0	3.4	
United States	6.9	-3.8	-11.0	7.6 <sup>f/</sup>	-6.9 <sup>f/</sup>	-8.5 <sup>f/</sup>	5.1	-4.1	±0	7.4 <sup>e/</sup>	4.6 <sup>e/</sup>	5.4	4.2	4.7	1.5	5.0	-5.5		

a/ Source: (1) Quarterly Bulletin of Steel Statistics for Europe, 1972, Vol. XXIII, No. 1.

(2) Monthly Bulletin of Statistics, September 1972.

(3) Table I.

(4) Economic Survey of Europe in 1971, Part II.

b/ The totals are arithmetic means.

c/ Source (2) in percentages.

d/ Including electric-furnace ferro-alloys.

e/ Excluding ferro-alloys.

f/ Ingots only.

TABLE 2  
WINTER TEMPERATURES, IN °C

Region and station	IV Quarter 1970 + I Quarter 1971			I Quarter 1971		
	Actual	Difference from average 1931-1960	same period a year before	Actual	Average 1931-1960	Difference from same period a year before
Northern Europe	- Stockholm	0.8	+0.2	+2.7	-1.1	+1.1
North Western Europe	- Manchester	6.3	+0.5	+1.0	5.0	+0.8
Western Europe	- Uccle (Belgium)	5.4	+0.3	+0.7	3.6	+0.7
	- Paris	5.8	-0.2	+0.2	4.0	-0.7
Central Europe	- Essen	4.5	-0.1	+0.7	2.9	+0
	- Leipzig	3.2	+0.4	+1.9	0.7	-0.1
	- Salzburg	1.4	-0.4	+0	-1.4	-1.4
	- Zurich	1.8	-0.9	-0.3	-0.9	-2.1
Eastern Europe	- Leningrad	-2.5	+0.7	+0.9	-4.9	+1.7
	- Warsaw	1.5	+0.4	+2.6	-1.3	+0.4
	- Bucharest	4.3	+1.1	-0.6	1.9	+1.5
Southern Europe	- Madrid	8.0	-0.3	-0.8	6.4	-0.7
	- Rome	10.8	••	-0.4	8.8	••
	- Athens	12.4	-0.1	-1.0	10.5	+0.3

Sources: World Meteorological Organization, Climatological Normals (CLINO) for Climate and Climate Ship Stations for the Period 1931-1960, Geneva 1967; US Department of Commerce, Monthly Climatic Data for the World, Vol.21, Asheville (USA) 1970, Vol.22 (1971); national sources.

## INTERNAL DELIVERIES OF HARD COAL TO MAIN CONSUMING SECTORS IN EUROPE

(Millions of metric tons)

Region and Country	Total			Of which											
				Coke Ovens			Thermal Power Stations			Industry			Households and small consumers		
	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971	1969	1970	1971
<u>Centre and North-West of Europe - Major Coal Producers</u>															
Germany, Fed. Rep. of	109.5	108.6	109.0	51.7	51.9	49.1	31.5	33.6	36.1	12.8	10.5	8.1	3.8	3.8	2.8
Belgium	20.0	18.8	15.7	9.5	10.0	8.5	3.6	2.5	2.1	0.9	0.7	0.6	4.4	4.2	3.1
France	54.9	52.5	48.0	17.7	18.6	16.0	10.7	9.1	8.9	8.3	7.2	5.6	7.3	6.7	5.5
Netherlands	10.2	8.0	5.2	2.6	2.6	2.3	3.1	1.8	0.6	0.6	0.4	0.2	1.7	1.3	0.7
United Kingdom	161.9	155.6	147.8	28.3	28.2	26.7	75.6	75.8	79.0	21.3	19.1	15.7	22.4	20.6	17.7
Total	356.5	343.5	325.7	109.8	111.3	102.6	124.5	122.8	126.7	43.9	37.9	30.2	39.6	36.6	29.8
<u>Others</u>															
Austria	3.1	3.3	2.7	2.2	2.5	2.2	0.2	0.1	-	0.1	0.1	0.1	0.3	0.4	0.2
Ireland	1.3	1.3	1.1	-	-	-	-	-	-	0.7	0.7	0.7	0.5	0.5	0.4
Luxembourg	0.1	0.1	0.2	-	-	-	-	-	-	0.1	0.1	0.2	-	-	-
Switzerland	0.6	0.5	0.3	-	-	-	-	-	-	0.1	0.2	0.1	0.1	-	0.1
Total	5.1	5.2	4.3	2.2	2.5	2.2	0.2	0.1	-	1.0	1.1	1.1	0.9	0.9	0.7
<u>Northern Europe</u>															
Denmark	3.8	3.3	2.1	-	-	-	2.9	2.8	2.0	0.5	0.1	-	0.2	0.1	0.1
Finland	3.0	2.8	2.6	-	-	-	1.2	1.3	1.1	1.3	1.2	1.2	0.2	0.1	0.2
Norway	0.8	0.8	0.9	0.5	0.4	0.4	-	-	-	0.3	0.3	0.3	0.1	0.1	0.1
Sweden	1.6	1.7	1.5	0.7	0.8	0.6	-	-	-	0.4	0.4	0.3	0.1	0.1	-
Total	9.2	8.6	7.1	1.2	1.2	1.0	4.1	4.1	3.1	2.5	2.0	1.8	0.6	0.4	0.4
<u>Southern Europe</u>															
Spain	13.7	14.2	13.5	5.0	5.4	4.3	4.6	5.0	5.6	3.3	3.0	2.9	0.4	0.3	0.3
Greece	0.1	0.2	0.3	-	-	-	-	-	-	-	0.1	0.3	-	-	-
Italy	12.3	12.5	12.0	8.4	9.5	9.3	1.5	1.1	1.3	0.4	0.4	1.0	0.5	0.8	0.8
Portugal	0.8	0.9	0.8	-	-	-	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	0.2
Turkey	4.9	4.8	4.6	2.1	2.0	2.1	0.8	1.0	1.2	0.5	0.2	0.1	0.4	0.3	0.2
Yugoslavia	2.3	2.3	2.7	1.6	1.7	1.7	-	0.1	0.2	0.3	0.2	0.5	-	-	-
Total	34.1	34.9	33.9	17.1	18.6	17.4	7.2	7.5	8.5	4.6	4.2	4.5	2.0	1.3	1.5
Total Western Europe	404.9	392.2	371.0	130.3	133.6	123.2	136.0	134.5	138.3	52.0	45.2	37.6	43.1	39.2	32.4
<u>Eastern Europe</u>															
Bulgaria	4.4	5.4	5.9	-	-	-	1.7	2.5	2.6	2.1	2.2	2.9	0.1	0.1	0.1
Hungary	5.8	6.1	5.7	1.0	1.0	1.4	1.9	1.8	1.8	0.9	0.8	0.5	0.7	0.8	0.4
Poland	109.4	112.7	115.3	19.4	19.9	20.3	23.2	24.4	25.0	31.7	32.2	33.6	20.9	22.6	23.1
German Democratic Republic	8.2*	8.5*	8.8*	4.3*	4.4*	4.5*	4.2*	4.2*	4.2*	0.2*	0.2*	0.2*	1.0*	1.1*	1.2*
Romania	6.5	6.6	6.7*	1.8	2.0	2.2*	2.3	2.6	2.9*	0.6	0.6	0.6*	0.2	0.3	0.3*
Czechoslovakia	29.3	29.8	30.8	13.6	14.0	14.3	6.2	4.4	4.7	6.1	8.6	8.9	1.1	0.9	1.1
Total Eastern Europe	163.6*	169.1*	173.2*	40.1*	41.3*	42.7*	39.5*	39.9*	41.2*	41.6*	44.6*	46.7*	24.0*	25.8*	26.2*
Total Europe	568.5*	561.3*	544.2*	170.4*	174.9*	165.9*	175.5*	174.4*	179.5*	93.6*	89.9*	84.3*	67.1*	65.0*	58.6*

TABLE 5

DISTRIBUTED STOCKS OF HARD COAL IN EUROPE  
(in millions of tons)

Country	Closing stocks at end of:		
	December 1969	December 1970	December 1971
Germany, Federal Republic of			
Austria	0.325	0.365	
Belgium	1 053	1 190	
Denmark	1 728	1 705	
Spain	3 300	3 200	
Finland	2 430	1 530	
France	4 876	4 193	4 476
Italy	1 750	1 795	
Poland	4.9	6.2	
United Kingdom	15 422	14 428	20 750

TABLE 6  
PRODUCTION OF HARD COAL, BROWN COAL, PATENT FUEL AND BROWN-COAL BRICKETTES  
(in million t and percentage distribution)

REGION AND COUNTRY	Hard Coal			Brown Coal			Patent Fuel			Brown-Coal Briquettes		
	1969	1970	1971	Production in 1971 as % of total output in 1971	1969	1970	1971	Production in 1971 as % of total output in 1971	1969	1970	1971	Production in 1971 as % of total output in 1971
<u>Centre and North-West of Europe</u>												
- Major Coal Producers												
Germany, Federal Republic of	111.8	111.4	111.1	21.6	107.4	104.5	117.2	5.9	2.7	24.8	10.5	9.6
Belgium	13.2	11.4	21.1	6.6	-	0.8	-	0.7	0.6	5.5	-	7.8
France	40.8	37.8	33.9	3.0	2.8	0.5	-	4.2	4.3	3.7	-	-
Netherlands	5.8	4.5	3.8	0.7	-	-	-	1.0	0.9	0.6	-	-
United Kingdom	155.7	147.1	149.4	29.1	-	-	-	1.2	1.4	12.8	-	-
Total	327.3	312.2	309.2	60.2	110.4	110.6	107.3	17.7	11.1	10.8	9.0	10.5
Others												
Austria	-	-	0.1	-	3.8	3.7	3.8	0.6	-	-	-	-
Ireland	0.2	0.2	0.1	-	-	-	-	-	-	-	-	-
Total	0.2	0.2	0.1	-	3.8	3.7	3.8	0.6	-	-	-	-
<u>Northern Europe</u>												
Denmark	-	-	0.4	0.4	0.1	-	-	-	-	-	-	-
Norway	0.4	0.5	0.4	-	-	-	-	-	-	-	-	-
Sweden	-	-	-	-	-	-	-	-	-	-	-	-
Total	0.4	0.5	0.4	0.1	0.4	0.1	-	-	-	-	-	-
<u>Southern Europe</u>												
Spain	11.6	10.8	11.3	2.2	2.7	3.1	0.5	0.2	0.2	1.8	-	-
Greece	-	-	0.3	0.1	6.8	7.9	10.9	1.8	-	0.1	0.1	0.2
Italy	0.4	0.3	0.3	0.1	1.9	1.4	1.3	0.2	0.1	0.9	-	-
Portugal	4.7	4.6	4.6	0.9	-	-	-	0.7	0.1	-	-	-
Turkey	0.7	0.6	0.7	0.1	3.7	4.0	4.2	0.7	0.1	-	-	-
Yugoslavia	-	-	-	-	25.8	27.8	30.2	5.0	-	-	-	-
Total	17.7	16.6	17.2	3.4	40.9	43.9	49.7	8.2	0.4	0.4	0.3	0.2
Total Western Europe	345.6	329.5	326.9	63.6	155.5	158.3	160.8	26.5	11.5	11.2	9.3	85.3
<u>Eastern Europe</u>												
Bulgaria	0.4	0.4	0.4	0.1	28.6	28.8	26.6	4.4	-	-	-	-
Hungary	4.1	4.2	3.9	0.8	22.4	23.7	23.5	3.9	3/	1.5	1.5	1.5
Poland	35.0	34.0	34.5	28.3	30.9	32.8	34.5	5.7	-	-	-	-
German Democratic Republic	1.5	1.0	1.0	0.2	255.1	260.6	262.8	43.4	-	-	-	-
Romania	5.8	5.9	7.1	1.4	11.1	14.1	13.8	2.3	-	-	-	-
Czechoslovakia	27.2	28.2	28.8	5.6	78.7	81.2	84.2	13.9	-	-	-	-
Total Eastern Europe	274.0	179.8	186.7	36.4	426.8	441.3	445.4	73.5	1.2	1.5	1.47	59.9
Total Europe	519.6	509.3	513.6	100	582.3	599.6	605.2	100	12.7	12.7	10.9	100
USSR	425.8	432.7	441.4	-	137.7	144.7	150.1	1.5	1.4	1.4	1.4	5.8
United States of America	513.4	550.6	509.6	4.6	5.0*	6.4*	-	-	-	-	-	-

b/ Included under Brown Coal Briquettes.  
b/ Including patent fuel.

TABLE 7  
OUTPUT PER MANSHIFT UNDERGROUND (HARD COAL)  
(in kg, annual averages and index numbers)

Year	BELGIUM	SPAIN <sup>b/</sup>	FRANCE	HUNGARY	ITALY	NETHERLANDS	POLAND	GERMANY, FEDERAL REPUBLIC OF	UNITED KINGDOM	CZECHOSLOVAKIA <sup>a/</sup>	TURKEY YUGOSLAVIA
1969	1 763	1 057	2 046	1 16	1 522	2 140	2 778	2 61	2 528	1 06	823
1969	2 408	1 417	2 522	1 978	2 437	2 818	2 491	3 665	3 303	2 760	935
1970	2 611	1 430	2 643	1 964	2 580	3 108	2 552	3 755	3 393	2 639	906
1971	2 623	1 351	2 626	1 918	2 480	3 184	2 700	3 828	3 380	2 660	750
								Index (1964 = 100)			
1969	137	133	123	130	96	132	120	140	131	160	114
1970	148	134	129	129	102	145	123	144	134	157	109
1971	149	127	128	126	98	149	130	146	134	158	91

<sup>a/</sup> The figures cover the Ostrava-Karvina hard-coal basin only (accounting for 80 per cent of total output in Czechoslovakia).

<sup>b/</sup> Per day.

TABLE 8  
UNDERGROUND EMPLOYMENT IN HARD-COAL MINES  
(in '000 men on books and percentage change)  
ANNUAL AVERAGE

Country	End 1969	End 1970	End 1971	<u>1971</u> <u>1970</u> %
Germany, Federal Republic of	141	138	135	- 2
Belgium	34	29	27	- 7
Spain	36	35	32	- 3
France	74	66	60	- 9
Hungary	9	8	8	+ 0
Italy	1	1	1	+ 0
Ireland	1	1	1*	+ 0
Netherlands	10	7	6	- 14
Poland	206	208	209	+ 0
Romania <sup>a/</sup>	12	13	16*	+ 23
United Kingdom	209	196	192	- 2
Czechoslovakia	49	48	47	- 2
Turkey	14	14	19	+ 36
Yugoslavia	2*	2*	2*	+ 0
Total Europe	798	764	755*	- 1.2

<sup>a/</sup> Including brown-coal mines.

TABLE 9

STOCKS OF HARD COAL AT PITHEAD IN EUROPE

END OF PERIOD

('000 t)

Country	December 1969	December 1970	December 1971
Germany, Federal Republic of	7 605	3 536	6 078
Belgium	631	215	396
France	7 790	5 992	4 742
Italy	11	12	37
Netherlands	355	285	615
Total EEC	16 392	10 040	11 868
United Kingdom	18 707	7 210	10 393
Total	35 099	17 250	22 261
Spain	2 692	1 971	1 305
Hungary	100*	100*	100*
Norway	61	79	57
Poland	1 602	837	1 998
Portugal	71	353	307
Czechoslovakia	1 874	2 061	2 243
Turkey	461	33	6

TABLE 10

STOCKS OF COKE AT COKE-OVENs AND AT IRON AND STEEL WORKS

End of Period

('000 t)

Country	At coke ovens			At iron and steel works <sup>a</sup>		
	December 1969	December 1970	December 1971	December 1969	December 1970	December 1971
Germany, Federal Republic of	189	485	5 404	930	1 467	1 104
Belgium	83	151	236	206	264	245
France	291	242	560	659	915	799
Italy	315	400	734	175	305	198* <sup>b</sup>
Netherlands	15	30	75	105	140	365
Total European Community	893	1 308	7 009	2 075	3 091	2 711*
United Kingdom	719	302	1 313	820	621	942
Total	1 612	1 610	8 322	2 895	3 712	3 653*
Denmark	-	-	-	28	32	31
Spain	125	179	315	190	51	..
Finland	3	13	23	95	165	277
Luxembourg	-	-	-	77	160	156
Norway	25	32	81	..	..	..
Poland	27	35	39	450	540	705
Czechoslovakia	2	96	99	264	162	188

a/ Stocks at industrial consumers at end of year are shown as stocks at iron and steel works.

b/ In June 1971.

TABLE 11  
 TRADE IN HARD COAL AND PATENT FUEL, AFFECTING EUROPE  
 (million t.)

a/ Exports from other countries than those enumerated are nil or less than half the appropriate unit.

b/ Excluding shipments to United States armed forces.

Excluding deliveries from Spitzbergen.

#### d/ Imports from:

German Democratic Republic  
Hungary

1969      1970      1971  
                 (million t)

TABLE 12  
TRADE IN COKE AFFECTING EUROPE  
 ('000 t)

TABLE 13

EUROPEAN TRADE IN BROWN COAL AND BROWN-COAL BRIQUETTES  
(<sup>1000 t</sup>)

Exporter	Total exports			of which:			To
	1969	1970	1971	1969	1970	1971	
Brown coal							
Germany, Federal Republic of	15	12	12	15	12	12	France Netherlands
Austria	7	8	6	7	8	6	Germany, Federal Republic of
France	18	24	19	17	23	15	Spain Italy
Poland	4 381	3 972	3 561	4 040	3 928	3 561	German Democratic Republic
German Democratic Republic	80	50	-	80	50	-	Germany, Federal Republic of
Czechoslovakia	1 150	1 094	1 201	1 126	1 059	1 154	Germany, Federal Republic of Austria
Yugoslavia	49	155	214	-	19	31	50
							Germany, Federal Republic of Austria Italy
Total Europe	5 700	5 315	5 013	5 354	5 256	4 964	Above countries
Brown coal briquettes							
Germany, Federal Republic of	952	937	712	214	279	189	Austria
				49	42	34	Belgium
				313	288	243	France
				159	132	95	Italy
				84	70	59	Luxembourg
				45	32	22	Netherlands
				89	90	72	Switzerland
Netherlands	-	-	-	-	-	-	Germany, Federal Republic of
				-	-	-	Belgium
				-	-	-	France
German Democratic Republic	3 509	3 786	2 760	1 613	1 545	1 028	Germany, Federal Republic of
				285	255	251	Austria
				81	66	36	Denmark
				283	445	525	Hungary
				301	310	6	Poland
				809	930	787	Czechoslovakia
Czechoslovakia	43	41	31	27	27	21	Germany, Federal Republic of
				10	9	7	Austria
Total Europe	4 504	4 764	3 503	4 360	4 520	3 373	Above countries

